MAY, 1908

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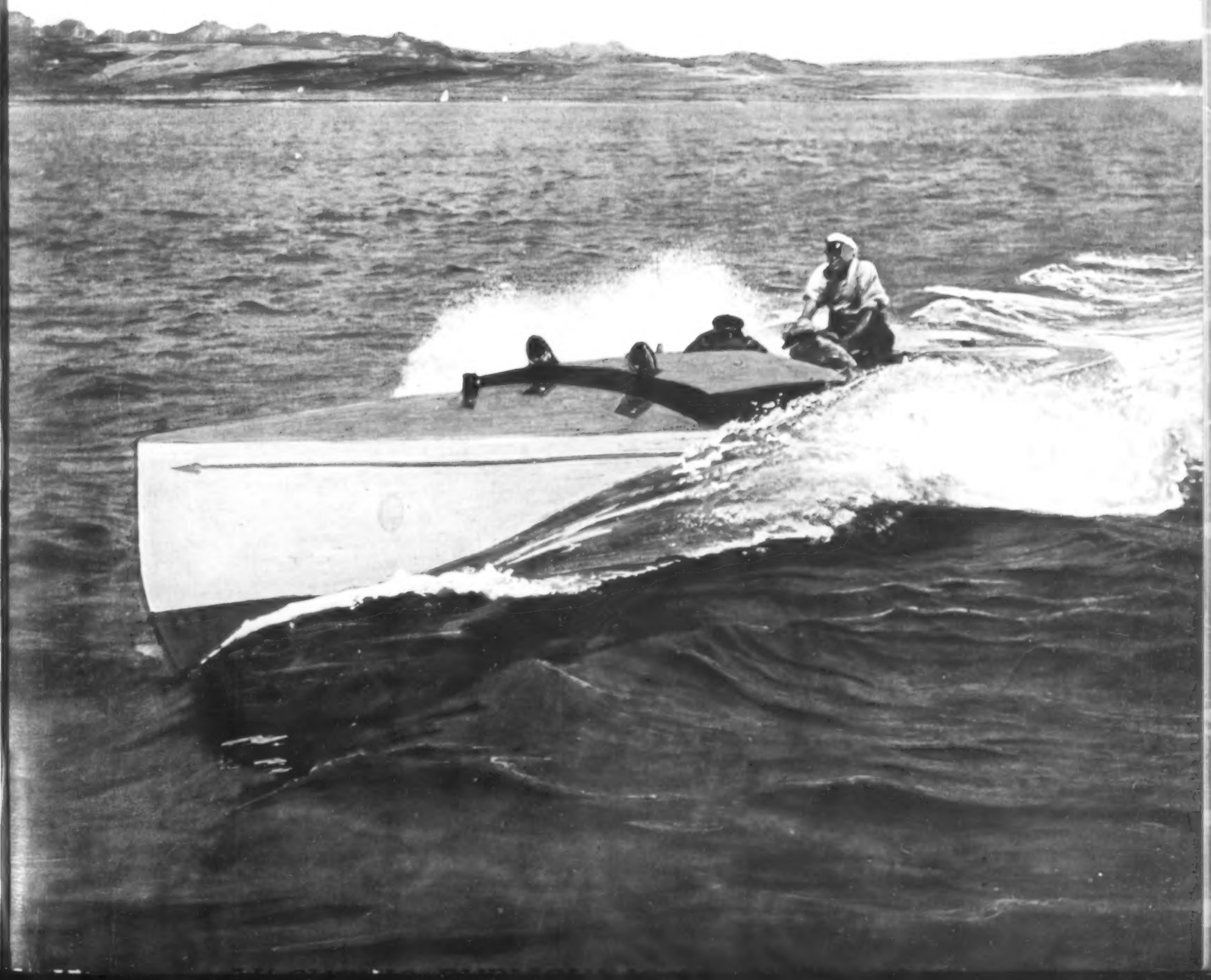
# Yachting



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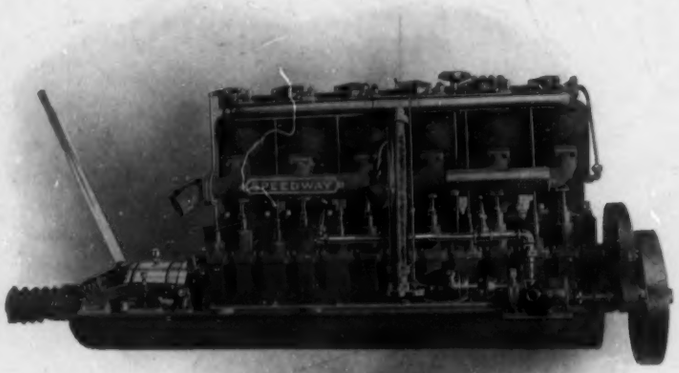


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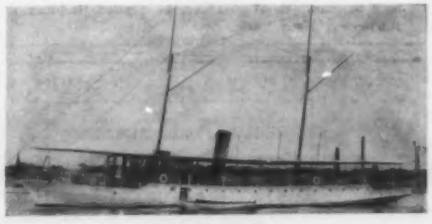

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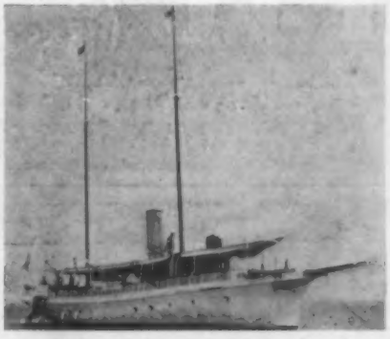

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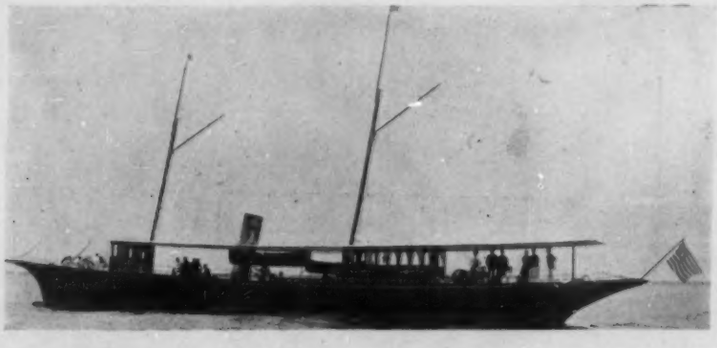

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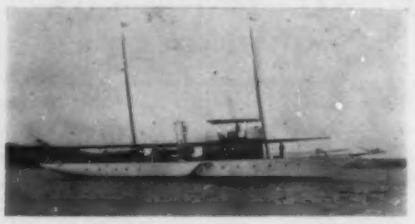

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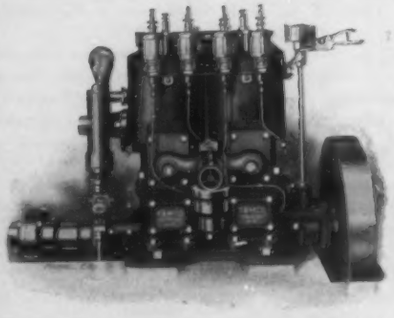

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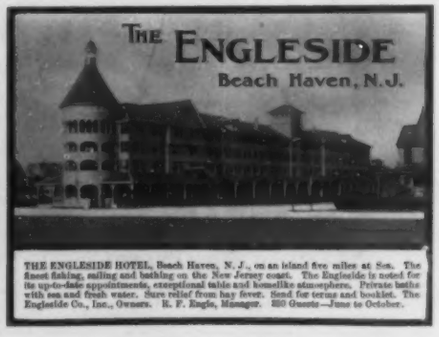


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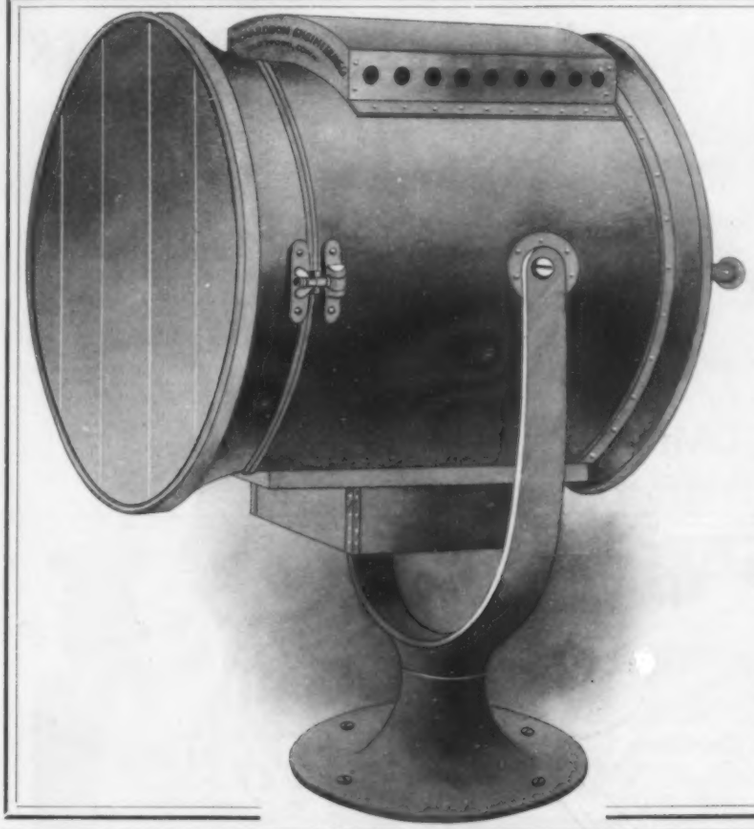

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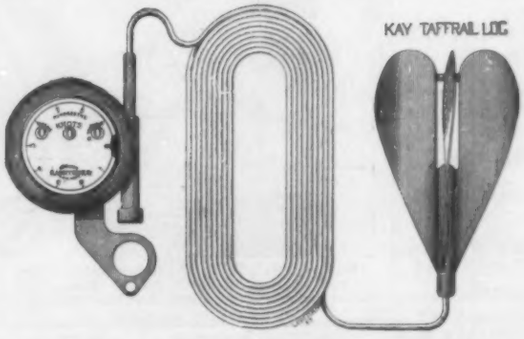


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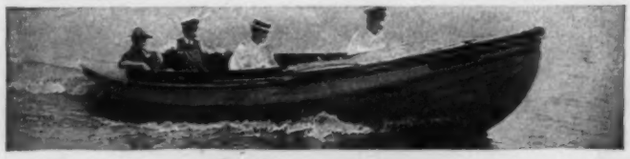

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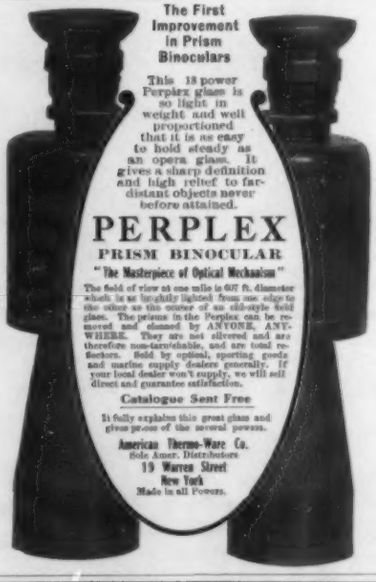

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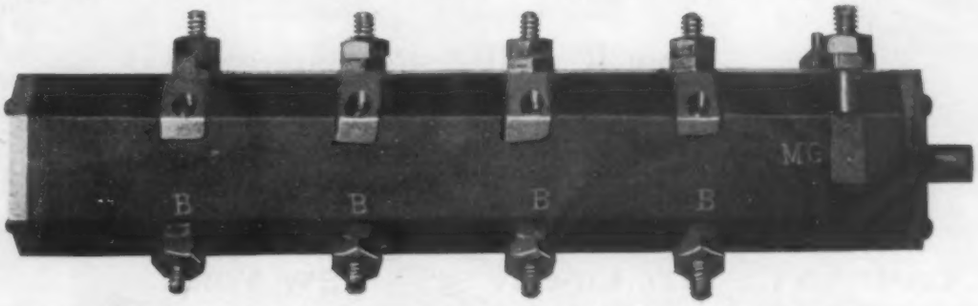

This switch allows the use of but one set of spark plugs with a double ignition system, employing a magneto and battery and coil combination, doing away with sooting idle set of plugs. Switch is provided with cut out bottom for testing sparks in various cylinders.

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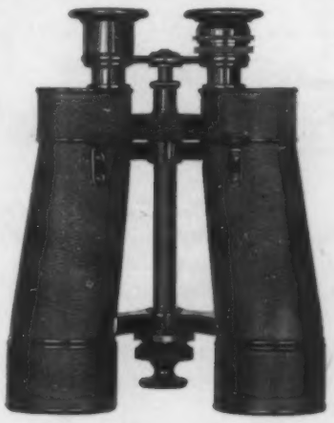

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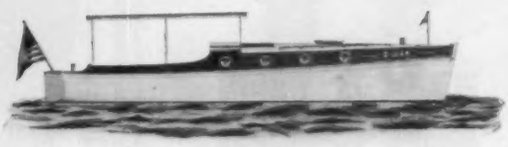

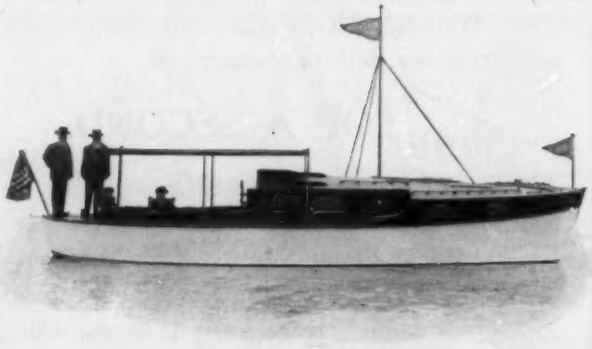

WE offer early delivery on our Standard Designs of 32-ft. and 36-ft. Hunting-Cabin Cruisers, as shown by the accompanying cuts. Prices and particulars on application.

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SANDALPHON

# "It Always Goes and Keeps Going Until I Stop It"

ALBANY, N. Y., Oct. 12, 1907.

LAMB ENGINE CO. OF NEW YORK, 92 Chambers St., New York, N. Y.

GENTLEMEN:—After a season's use of the 18-horsepower Lamb Engine, which I purchased from you, I thought I would let you know how satisfactory it has been. When I went down to the Motor Boat Show to buy an engine for my boat I had no particular engine in mind, but wanted the best on the market. After a careful examination of all the leading high grade motors displayed at the Show, I concluded that the Lamb was ahead of them all in design, material and workmanship. My boat is a 58-foot auxiliary sloop, 12 feet 6 inches beam, and 5 feet draft. She is of rather heavy construction and I did not expect much speed under power, but am pleased to say that she makes better than 8 miles an hour with engine alone, and 12 miles with both power and sail. I have used the boat a great deal this summer, having cruised more than 2000 miles, and have found the engine absolutely reliable under all conditions. Furthermore, I have not had to spend one cent on repairs, and after a season's hard use I have carefully gone over every part of the engine and have found everything in the finest possible condition. I can truthfully say that I have never bought anything that has given me quite as much satisfaction and pleasure as this engine, and if I could not get another I would not part with mine for twice its cost.

In conclusion, I wish to thank you for the generous and courteous treatment accorded me, and wish you continued success and prosperity during the coming year.

Yours truly, Signed—JOHN E. SCOPES, Com. A. Y. Club.

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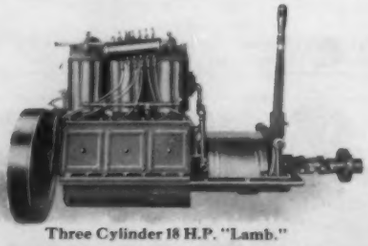

Three Cylinder 18 H.P. "Lamb."

# In the Captain's Cabin

MANY pictures of yachting, such as that of the square-rigger on the February front cover, have brought many requests from our readers for photographic enlargements. We have decided, as announced elsewhere in the magazine, to have a number of the best subjects reproduced in photogravure, and to add to these from time to time as unusually good subjects appear in YACHTING. They will be published under the general name of "Yachting Prints," and will be handled by the leading art stores throughout the country. As many know, the photogravure process is much more beautiful in result than a photographic print, because of the softness of the treatment, which produces a vastly higher artistic quality. The resemblance to an etching, in fact, is close. At the same time, the process is photographic, retaining all the clearness and natural quality of the original picture. Best of all, the photogravure, while more valuable and possessing greater artistic merit, is, when reproduced in quantity, more economical, and for this reason we are able to offer these prints at $1.00 and $1.50 each. We have ready now, "The Trough of the Sea," from our August cover, which attracted such widespread comment; "A Good Slant of Wind," from our February cover, one that brought us more requests for enlargements than any other; "Clewed Up," our double page feature from the March, 1908, issue; "The Moon Path," the frontispiece for March; "The Night Patrol," the frontispiece from our February number, pronounced by many to be the most artistic half-tone that has appeared in YACHTING, and, indeed, one of the most effective and unusual photographs that has appeared in years. Also "The Gloucesterman," which appeared as our double page feature in November—a picture conveying with it the swing and feeling of the most famous seafaring craft in the world.

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"A GOOD SLANT OF WIND." ONE OF THE YACHTING PRINTS. PHOTOGRAVURE, ON INDIA PAPER, HAND MOUNTED, SIZE 17½ x 23. PRICE, CARRIAGE PAID, $1.50.

## EDITORIAL PLANS.

A letter reached us the other day from one of our readers which read in part something like this:

> "I am a constant reader of your valuable magazine and find it not only a source of great pleasure but I have received much valuable help in caring for my boat from it."

Many of our friends, like this reader, of practical bent, especially those whose inclination is to power boating, will be interested in knowing that we have arranged for a series of practical articles on the engine and its problems, by H. L. Towle, than whom there is none better qualified to write in this country. In this issue he writes of lubricants and lubrication; in succeeding numbers he will cover every phase of the engine problem. Harold Clauson will resume in June the series on the "Practical Side of Motor Boating." E. T. Keyser will continue to treat, in his practical and readable way, of the motor boat as distinguished from the engine.

In addition to these, we have secured the services of Frederick W. Goeller, a yacht designer by profession, to contribute articles which will be of assistance to the motor boat or sailing yachtsman who believes in learning things for himself instead of paying others to attend to them for him. Merion de Pertrech and A. W. Partridge will continue their labors for this magazine. All in all, the practical side of YACHTING in the coming months will be as prominent, as alluring, as valuable as other matter which in the past has contributed largely to give the magazine its present standing.

By practical, we mean—practical, nothing less. This is a word that has come to be much abused in yachting periodicals, as in others. From the outset we realized that there was an immense undeveloped field in the line of articles which, while interesting, were also helpful. "Helpful," with the editors of YACHTING, in fact, is regarded as the definition of practical. A practical article wandering on and on through a maze of involved technicalities which only the expert can grasp—and occasionally not even he—is to us worse than useless; it is an insult to our readers.

We are going to demonstrate that articles can be printed which no motor boat man or sailor can really afford to be without. They will not be of the dry, text-book variety, but filled with human interest. They will meet the demands, answer the questions, solve the problems that confront the active amateur, and we do not hesitate to venture the assertion that even the professional will be the wiser for considering them.

## YACHTING IN BOUND FORM.

Have you ever realized how valuable YACHTING would be to you in bound form, with its practical information and suggestion, racing records, plans and general articles, to say nothing of its wealth of beautiful illustrations? Bound Volume II was completed in December, comprising numbers from the July issue. This is an especially important volume, as it includes the record in picture and text of all the important racing events of the season, with the most graphic and striking illustrations of yachts in action ever published. Every yachtsman who wants to keep in touch with the progress of the sport, developments in racing and activities of clubs in various parts of the country, will want this volume for reference. The price complete is $2.75. Volume I, which includes the first issues published—from January to June, 1907, inclusive, can also be obtained at this price. Together they cover the entire year of yachting—the sport, and the first year of YACHTING—the magazine. To subscribers who will send us complete files, we will bind them for $1.25, or for those who prefer to have their local binder do the work, we can supply covers for $1.00.

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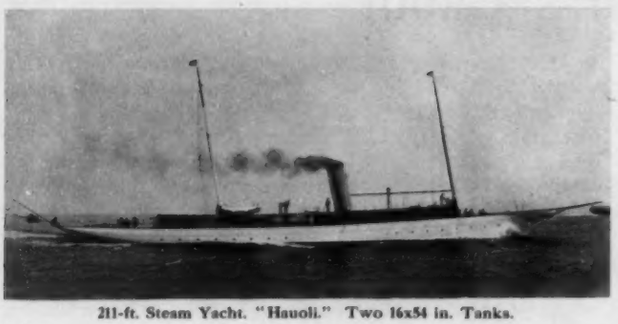

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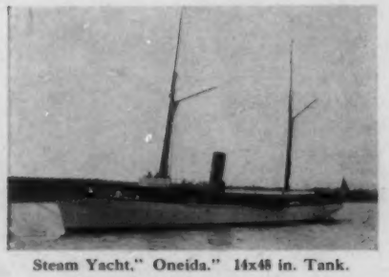

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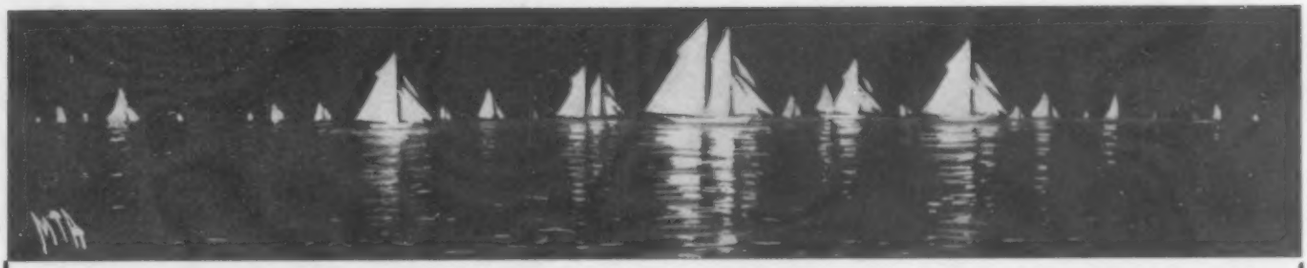
140-ft. Steam Yacht. "Winchester." Two 14x48 in. Tanks.



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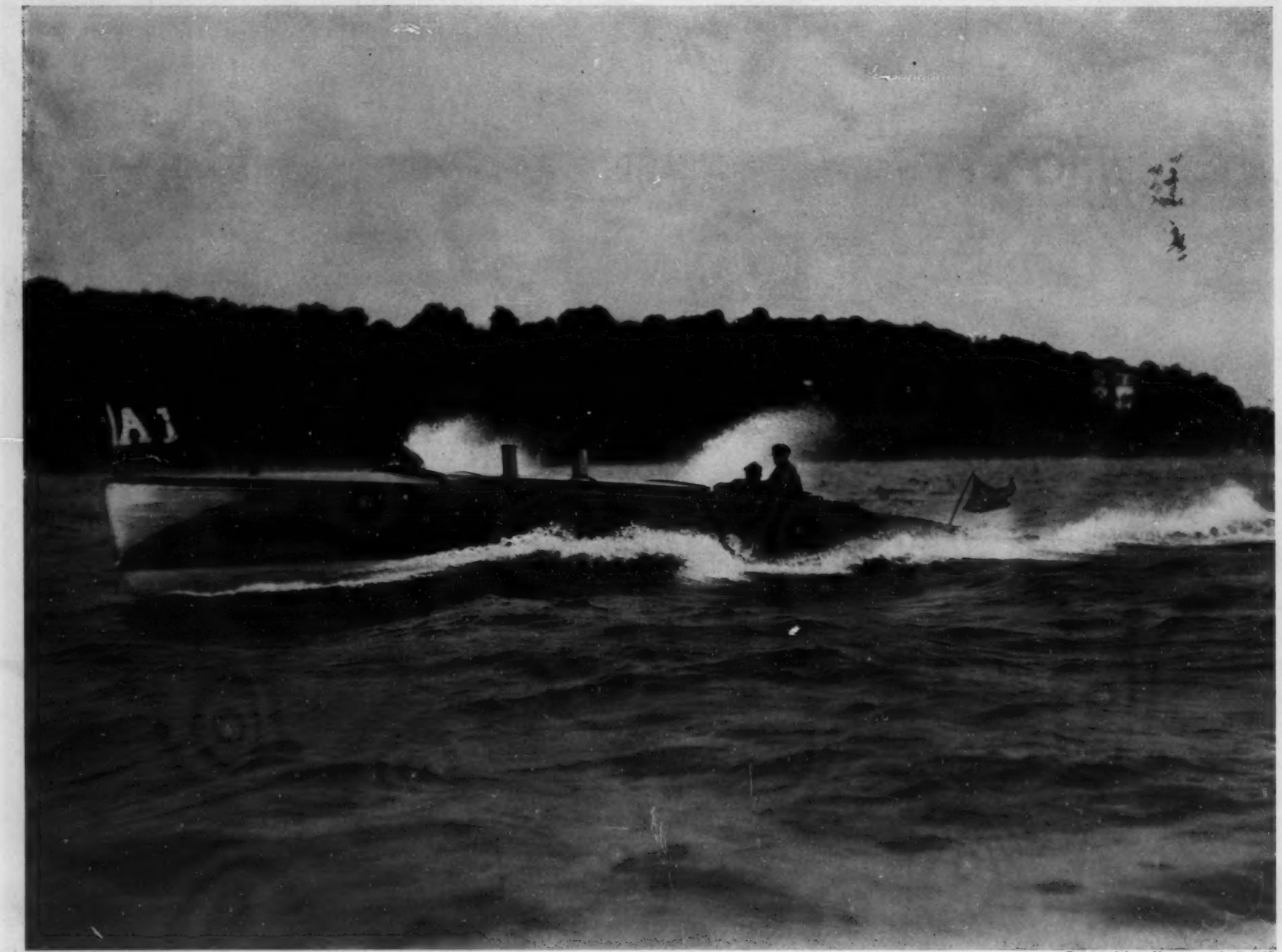

*Reprinted from* YACHTING, *April*, 1907.

THE "JERSEY FLYER," DIXIE, AS IN 1907, THE QUEEN OF THE LAKE WORTH REGATTA. IN WINNING FOR THE SECOND TIME THE DEWAR TROPHY FOR THE FASTEST MILE, SHE BROKE THE WORLD'S RECORD, WITH A SPEED AVERAGE OF 29.728 MILES AN HOUR OVER SIX ONE-MILE COURSES. SHE ALSO WON THE 20-MILE ENDURANCE RELIABILITY EVENT.

# YACHTING

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FERRO, THE HOBE SOUND BOAT, LEADING BABY BULLET, RED BIRD AND KITTY SPARKS IN THE TEN-MILE RACE ON THE SECOND DAY.

# The Lake Worth Regatta

THE FOURTH ANNUAL RACE WEEK OF THE PALM BEACH POWER ASSOCIATION WAS SUCCESSFUL IN EVERY PARTICULAR—SWIFT BOATS FROM ALL PARTS OF THE COUNTRY COMPETED IN THE VARIOUS EVENTS—DIXIE BROKE THE WORLD'S RECORD IN THE CONTEST FOR THE DEWAR SHIELD

By WARREN HAPGOOD

Photographs by Edwin Levick

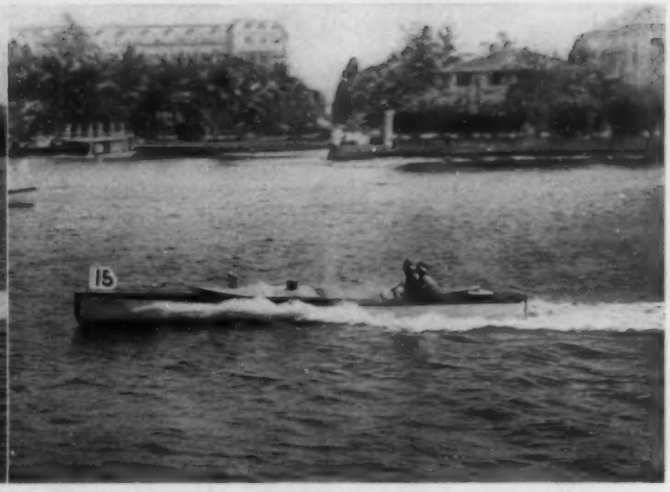
TO THE northerner who in the ides of March journeys from say New York or Chicago to Florida, "land of perpetual summer," the transition is nothing less than startling. The change is complete. As though by a brief rub on some genii's ring, the sojourner is hurried from a land of fur coats and tippets, of grip and pneumonia to a domain of genial sunlight, of caressing zephyrs, of drowsy waters. Laughter is here, and song, and color. Dull care is flouted because people have come here to Palm Beach for the precise purpose of flouting everything that annoys or worries, or carks the soul; everyone is happy, or seems so, which amounts to the same thing so far as the observer is concerned, and all the women are beautiful and all the men brave and gallant, and—

POURING GASOLENE INTO GENERAL'S AUXILIARY TANK. THIS BOAT WAS ONE OF THE SUCCESSFUL COMPETITORS ON LAKE WORTH, WINNING FOUR FIRSTS. SHE IS OWNED BY E. R. WALKER, OF DETROIT.

But it is not the province of the writer to pen in this article a word picture of a famous winter resort. It was the Fourth Annual Regatta Week of the Palm Beach Power Boat Association which brought him here, and the success of this important event and the influence which it may have upon the sport at large well warrants more attention than the space in this magazine allows. But inasmuch as environment, and sights, and sounds attendant upon any sporting event have their definite place, the foregoing description may be pardoned.

Of the four days of racing it may be said that Lake Worth, nor any other body of water in this country, ever saw better. Swift boats participated in every event, records were broken and the course on each day was lined by craft of every size and description, from launches and houseboats to steam yachts. Hundreds of enthusiastic partisans crowded the decks and cheered their favorite racers on to victory. The sea wall was lined with hundreds in brilliant costumes and, surely, there was every incentive for the motor boat men to do their best. And so they did. It was interesting to note the familiarity with the machinery of the boat which the spectators displayed, and one heard of exhaust—it was entirely the thing to be conversant with every point which concerned a fast-flying motor boat, and the man or woman who had not at least a fund of motor boat

GENERAL IN ACTION. HER SQUARE TRANSOM STERN AND THE EXTRA GASOLINE TANK MADE HER THE MOST CONSPICUOUS BOAT ON THE COURSE.




SECRET, OWNED BY J. H. ALLEN OF DAYTONA, FLORIDA. SHE STARTED IN SEVERAL RACES, BUT WAS NOT SO SUCCESSFUL AS OTHER FLORIDA BOATS.

small talk was hopelessly out of it. It is the same at Newport when the yachts arrive—you must be able to talk about the sport.

When the General, for instance, appeared out on the course, making her long sweeping preliminary practice turns, or the Dixie, with her mahogany hull, or the Dolphin or any other boat, put out for the starting line, it was a dull spectator indeed who could not identify them without even glancing at the racing number.

Of course the hero of the week was Dixie, the New Jersey flyer. She not only won the Dewar Trophy Shield for the fastest mile, but in so doing she broke the world's record. This was on the last day of racing. On the six runs of a mile each Dixie's time was as follows:

First run south, 2.18.4-5; second run north, 2.20.2-5; third run south, 2.19.4-5; fourth run north, 2.19.3-5; fifth run south, 2.18.4-5; sixth run north, 2.18.3-5.

This makes an average of 29.728 miles an hour, the record for the course and considerably faster than the record for the Hudson River course, which is 29.622 miles an hour. On this day, also, Dixie won the twenty-mile endurance reliability race, the table of which follows:

Red Bird, 3.00.13½; did not round buoys; allowance, 25.28.
Ferro, 3.24.37; did not finish; allowance 19.36
Dolphin, 3.42.40; 4.47.44; allowance, 14.56.
Trente-Sept, 3.48.44½; 4.43.45; allowance, 13.17.
Dixie, 3.58.17½; 4.41.40; allowance, 10.55.

Dixie, winner; Trente-Sept, second. Per cent. variation—Dolphin, 8.4; Trente-Sept, 3.7; Dixie, 0.6.

On this day four boats entered in the five-mile race for Florida built boats. Bruiser started at 5.23.41 and finished at 5.40.10. Trente-Sept started at 5.24.21 and finished at 5.37.59½. Trente-Sept was the winner and Bruiser second. Red Bird did not round buoys and Baby Bullet did not finish.

The weather on the opening day of the regatta, Tuesday, March 17th, was ideal, the water quiet and the course generally ideal with the exception that it was a bit shallow for boats of Dixie's class. The course was 5.182 statute miles. Each side and turn of the course was marked with white flags and at each stake on each turn and at the middle stake on each side of the course was anchored a white barrel. Stakes and barrels were to be left on the port hand, the penalty being disqualification, and shoal water was marked by stakes bearing red flags. All such marks were to be left to starboard. The starting and finishing line was due west of the Royal Ponciana dock and from the porch of that hotel a full view of the course was had.

The committee boat was the auxiliary sloop Amber Jack, and a mighty busy boat it was. The first race, starting at 10.30 o'clock, was open to boats in Class A for the Beinecke and Company Cup. The course was five miles. Here is the table:

First Race—Class A, for boats rating less than 80; American Power Boat Association rules; course, five miles.

| Boat | Start. h. m. s. | Finish. h. m. s. |
|---|---|---|
| Irene | 10 30 00 | 11 08 57 |
| Red Bird | 10 31 00 | 11 57 26 |
| Dolphin | 10 32 24 | 10 48 11 |
| Kitty Sparks II | 10 35 01 | 10 56 42 |

Dolphin the winner.

Second Race—Class B, for boats rating 80 and above; course, five miles

| | | |
|---|---|---|
| General | 11 00 00 | 11 12 55 |
| Trente-Sept | 11 00 23 | 11 13 52 |
| Dixie | 11 02 46 | 11 14 51 |
| Secret | 11 00 38 | Not timed |
| Bruiser | 11 01 44 | Not timed |

General the winner.

Third Race—For all ratings; course, ten miles.

| | | |
|---|---|---|
| Irene | 11 30 00 | 12 48 55 |
| Red Bird | 11 32 00 | 12 25 23 |
| Dolphin | 11 34 49 | 12 07 22 |
| Kitty Sparks | 11 40 03 | 12 23 09 |
| General | 11 44 13 | 12 10 44 |
| Trente-Sept | 11 44 59 | 12 11 44 |
| Secret | 11 45 28 | 12 20 41 |
| Lamb | 11 45 27 | Not timed |

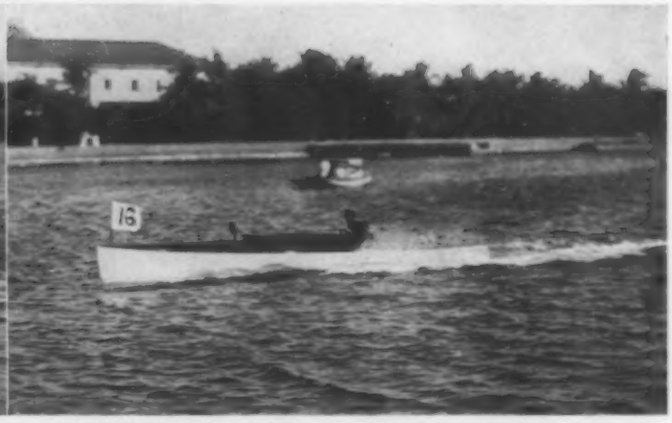
Dolphin the winner.

Fourth Race—For boats of all ratings; course, fifteen miles.

Irene, Dolphin, Kitty Sparks, Secret, Bruiser, Trente-Sept, General and Dixie started, Irene was the winner and Dolphin was second.

BRUISER, OWNED BY J. K. CLARK OF ARDMORE, PENNSYLVANIA. SHE FIGURED IN SEVERAL EXCITING BRUSHES WITH GENERAL, DOLPHIN AND IRENE. SHE FAILED TO WIN A FIRST PRIZE, LOSING SEVERAL EVENTS BY NARROW MARGINS.

DOLPHIN, OWNED BY ROBERT N. DIXON, OF NEW YORK. NEXT TO DIXIE, THIS FLEET CRAFT TOOK HIGH HONORS. SHE WON FIVE FIRSTS AND THREE SECONDS.




TRENTE-SEPT, OWNED BY GEORGE GINGRAS, OF ROCKLEDGE, FLORIDA. SHE WAS THE MOST SUCCESSFUL OF THE FLORIDA BOATS, WINNING THREE FIRST AND TWO SECOND PRIZES.

All in all, this day was Dolphin's day, taking as she did first prize in two races and second in a third. The fifteen-mile race in the afternoon was a rattling event. Irene, Kitty Sparks II, Secret, Dolphin, Bruiser, Trente-Sept, General and Dixie got off in the order named. Irene and Bruiser led at the end of the first lap. On the second lap, the most thrilling of the regatta, Bruiser came plunging up, leading all the boats, with Dolphin pressing her close and Trente-Sept and General close aboard. It was motor boat racing at its best. At the end of the third lap came Bruiser, still in the lead, Dolphin, General and Trenté-Sept. At the last, by a great dash, Irene won.

On the second day interest in the regatta had grown to fever heat. The events, quite properly, were so timed that everyone had opportunity to attend the noon concert at the Breakers, and in the afternoon to take tea in the cocoanut grove. The tables of the various races follow:

First Race—Class C; course, five miles.

| Boat | Start. | Finish. | Elapsed Time. |
|---|---|---|---|
| | h. m. s. | h. m. s. | h. m. s. |
| Irene | 10 30 16 | 11 07 47 | 0 37 31 |
| Baby Bullet | 10 46 49 | 11 10 56 | 0 24 07 |
| Kitty Sparks | 10 47 05 | 11 09 57 | 0 22 52 |
| Secret | 10 52 27 | 11 08 38 | 0 16 11 |
| Dolphin | 10 52 49 | 11 08 07 | 0 15 18 |
| Trente-Sept | 10 54 53 | 11 08 11 | 0 14 18 |
| Ferro | 10 46 52 | 11 07 57 | 0 21 05 |

Irene wins, with Dolphin second. Ferro entered for rating.

Second Race—Class D; course, five miles.

| | Start. | Finish | Elapsed Time. |
|---|---|---|---|
| | h. m. s. | h. m. s. | h. m. s. |
| General | 11 01 31 | 11 14 21 | 0 14 18 |
| Dixie | 11 03 16 | 11 14 19 | 0 11 03 |

Dixie the winner.

Third Race—Class CD; course, ten miles.

| | | | |
|---|---|---|---|
| Irene | 11 15 12 | 12 31 57 | 1 16 45 |
| Red Bird | 11 40 03 | 12 32 27 | 0 52 24 |
| Baby Bullet | 11 47 03 | 12 35 05 | 0 48 02 |
| Kittie Sparks | 11 48 29 | 12 32 13 | 0 43 44 |
| Secret | 11 59 50 | 12 33 02 | 0 33 12 |
| Dolphin | 12 00 30 | 12 30 57 | 0 30 25 |
| Bruiser | 12 03 13 | 12 35 02 | 0 31 49 |
| Lamb | 12 04 15 | 12 40 41 | 0 36 26 |
| Trente-Sept | 12 04 41 | 12 31 31 | 0 26 50 |
| Dixie | 12 09 21 | 12 31 13 | 0 21 52 |
| Ferro | 11 52 46 | 12 34 14 | 0 41 48 |

Dolphin wins, with Dixie second.

Fourth Race—Class C; course, five miles.

| | | | |
|---|---|---|---|
| Irene | 2 45 30 | 2 54 17 | 0 38 47 |
| Baby Bullet | 2 34 30 | 2 58 25 | 0 23 55 |
| Kitty Sparks | 2 31 13 | 2 54 08 | 0 22 55 |
| Ferro | 2 36 50 | 2 58 04 | 0 21 14 |
| Lamb | 2 34 52 | 2 53 22 | 0 18 30 |
| Dolphin | 2 37 31 | 2 52 55 | 0 15 24 |
| Secret | 2 37 37 | 2 53 51 | 0 16 14 |
| Trente-Sept | 2 39 22 | 2 52 40 | 0 13 18 |

Trente-Sept wins, with Dolphin second.

Fifth Race—Class D; course, five miles.

| | | | |
|---|---|---|---|
| Bruiser | 3 00 15 | 3 14 46 | 0 14 31 |
| General | 3 01 22 | 3 14 28 | 0 13 06 |

General the winner.

WATCHING A SPURT BETWEEN GENERAL AND BRUISER. THE COURSE WAS LINED WITH PLEASURE CRAFT OF EVERY DESCRIPTION, THE DECKS CROWDED WITH ENTHUSIASTIC SPECTATORS.

Sixth Race—Classes C, D; course, 15 miles.

| | Start. | Finish. | Elapsed Time. |
|---|---|---|---|
| | h. m. s. | h. m. s. | h. m. s. |
| Red Bird | 3 10 09 | 4 26 55 | 1 16 46 |
| Baby Bullet | 3 14 18 | 4 29 18 | 1 15 00 |
| Ferro | 3 24 08 | 4 26 57 | 1 02 29 |
| Lamb | 3 32 08 | 4 27 34 | 0 55 26 |
| Secret | 3 40 57 | 4 28 35 | 0 47 38 |
| Bruiser | 3 44 12 | 4 27 32 | 0 43 30 |
| Trente-Sept | 3 46 22 | 4 26 42 | 0 40 20 |
| General | 3 47 46 | 4 26 07 | 0 38 21 |

General wins, with Trente-Sept second.

The last event of the afternoon was the most exciting and satisfactory of the day. This was the fifteen-mile race for the Perceval Cup. The boats went to the starting line as follows: Red Bird, Baby Bullet, Kitty Sparks, Ferro, Lamb, Dolphin, Secret, Bruiser, Trente-Sept, General and Dixie. At the end of the first lap there was no appreciable change in the position of the boats, and this was also the case at the end of the second lap at which time Bruiser, Trente-Sept and General were fighting hard for supremacy. Finally, General, the Detroit boat, shot by Trente-Sept, and later, opposite the church on the west side and in full view of the cheering spectators, she shot ahead of the Clarke boat. At the end of the third lap the whole bunch of boats could be seen coming up to the stake nearly abreast. Red Bird it was seen later was in the lead, but off Fleur d'Eau, General passed her in an exciting dash and won the race. Trente-Sept was second, Red Bird third, Ferro fourth, and then Bruiser, Lamb, Secret, and Baby Bullet.

The importance of Thursday's races was to some degree diminished by the absence of Dixie, which did not enter any of the events. Here is the summary:

First Race—Class E; course, five miles

| | Start. | Finish. | Elapsed Time. |
|---|---|---|---|
| | h. m. s. | h. m. s. | h. m. s |
| Irene | 10 30 13 | 11 07 45 | 0 37 32 |
| Red Bird | 10 42 21 | 11 07 51 | 0 25 30 |
| KittySparksII | 10 45 52 | 11 07 54 | 0 22 02 |
| Ferro | 10 47 02 | 11 08 00 | 0 21 58 |
| Lamb | 10 49 37 | 11 10 40 | 0 21 03 |
| Dixolite | 10 46 04 | 11 01 54 | 0 29 50 |

Irene the winner, with Red Bird second.

Second Race—Class F; course, five miles.

| | | | |
|---|---|---|---|
| Dolphin | 11 00 14 | 11 15 11 | 0 14 57 |
| Bruiser | 11 01 14 | 11 15 28 | 0 14 14 |
| Trente-Sept | 11 01 48 | 11 15 13 | 0 13 25 |
| General | 11 02 38 | 11 15 19 | 0 12 41 |

Dolphin the winner, with Trente-Sept second.

Third Race—Class E; course, five miles.

| | | | |
|---|---|---|---|
| Irene | 11 10 06 | 11 47 50 | 0 37 44 |
| Kitty Sparks | 11 25 51 | 11 47 37 | 0 22 46 |
| Ferro | 11 26 59 | 11 47 34 | 0 20 35 |
| Lamb | 11 29 42 | 11 48 30 | 0 18 48 |
| Dolphin | 11 32 37 | 11 47 38 | 0 15 01 |
| Bruiser | 11 33 40 | 11 48 30 | 0 14 50 |
| Trente-Sept | 11 34 24 | 11 47 35 | 0 13 11 |
| General | 11 35 01 | 11 48 28 | 0 13 27 |

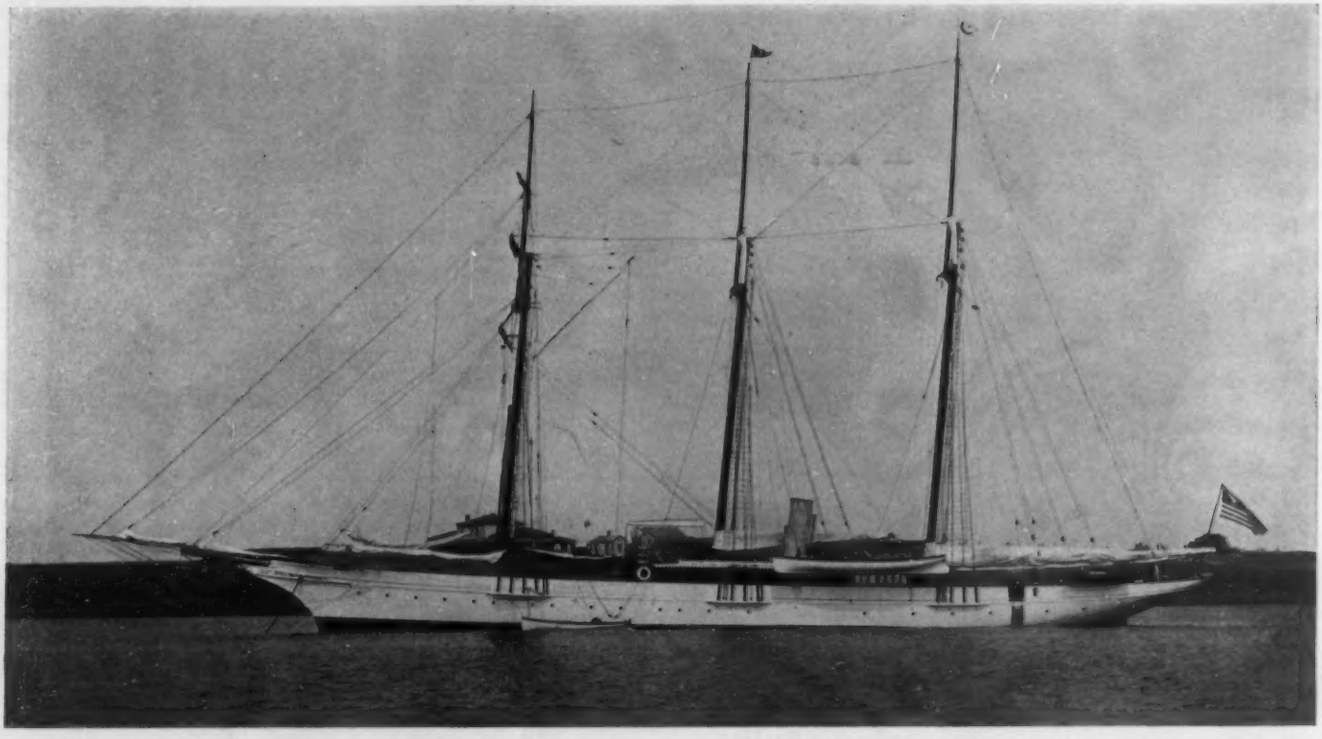
Ferro the winner, with Kitty Sparks second.

Fourth Race—Class E; course, five miles.

| | | | |
|---|---|---|---|
| Irene | 2 30 06 | 3 07 57 | 0 37 50 |
| Dixolite | 2 46 30 | 3 10 47 | 0 24 17 |
| Ferro | 2 48 00 | 3 08 59 | 0 20 59 |

Irene the winner, with Ferro second.

(Continued on page 306.)



IN WHICH THE SAILS CONSTITUTE THE AUXILIARY. THE YACHT SULTANA. SHE WAS ONE OF THE FIRST LARGE AUXILIARY YACHTS TO FLY THE AMERICAN ENSIGN. SHE IS EQUIPPED WITH TRIPLE EXPANSION ENGINE OF 300 HORSEPOWER.

# The Auxiliary Seagoing Yacht

AUXILIARIES HAVE COME TO BE AN IMPORTANT FACTOR IN THE SPORT IN THIS COUNTRY. SOME CRUISE "OFF SOUNDINGS," OTHERS ARE UTILIZED FOR SAILING IN HOME WATERS. THERE ARE TWO TYPES, THE VESSEL WITH SAILS AS THE MAIN PROPULSIVE POWER, THE OTHER WITH AN ENGINE, STEAM OR GASOLENE, AS THE PRINCIPAL MEDIUM.

By CAPTAIN JAMES C. SUMMERS

YACHTSMEN are beginning to appreciate the usefulness of the auxiliary craft and what an important factor it has become in sport. It is safe to say that all of the larger yacht clubs, and many of the small ones, have enrolled in their fleets, from two to a dozen vessels of the auxiliary type. They are equipped with either steam or gasolene engines, which are used to propel them in calm weather, when it is necessary to stem the tide or, perhaps, to put the yacht alongside of a pier.

There are two distinct types of the auxiliary yacht. One is the sailing vessel equipped with power, whose chief source of propulsion is in her splendid outfit of canvas, but which has, stowed away under the quarter deck of the cockpit, an engine of sufficient horsepower to drive her four or five knots an hour in smooth water, and powerful enough to make her hold her own in a head sea, or to bring her into a harbor when her owner and his guests want to dine on shore at the club house, for instance, or catch a train for the city. The other is the steam yacht, with sails as the auxiliary power. This vessel is usually fitted with a liberal sail plan; square-rigged forward perhaps, and with a fore and aft rig on the main and mizzen, a tidy craft for example, like the Aloha, owned by Vice-Commodore Arthur Curtiss James of the New York Yacht Club, which can make from eight to twelve knots under sail alone, or like Lord Brassey's famous old Sunbeam, that has often logged nine knots under canvas in a fresh breeze.

Then there are smaller auxiliaries, such as the yawls. Scores of them may be seen in these waters every season, and they are multiplying fast. An inexpensive motor, installed in one of these craft and properly cared for, is an auxiliary or help in every sense, for where, in former years, the yachtsman becalmed in the Sound was often compelled to spend half the night in his small tender, trying to tow the big boat into some harbor, he now starts his "kicker," furls his sails, and steers straight for the twinkling harbor lights, dropping his anchor, or picking up his mooring buoy in time to go ashore and keep that appointment he made in the morning, when there was a good breeze blowing. The wideawake owner of a sloop or catboat, who does not want to race her, often puts in a "kicker," and she immediately becomes an auxiliary on a small scale.

But it is with the larger craft, those that cruise "off soundings," that this article will deal more directly, for while it is true that the smaller yachts are ideal vessels for use on inland waters and for those whose time limit for a cruise is from one to four weeks, there is no denying the fact that the greatest amount of pleasure is afforded by the staunch, seagoing vessel, that will carry her owner and his guests with comfort through calm or gale o'er many seas to the Occident, the Orient, or the land of the Midnight Sun, and return them safely to their home port.

A naval architect of wide experience in the construction of auxiliary yachts, when asked the other day which was the best

type to build, replied: "The best type is the type a man wants. He must make up his mind just what kind of a boat he wants—whether she is to steam fast and sail slowly or sail fast and steam slowly. Then let him give the order. If the designer knows his business, he will furnish the type of the yacht asked

GIVING THE ENGINE A REST. WINNEBAGO GOING INTO THE WIND. SHE IS 52 FEET OVER ALL, A STAUNCH CRUISER.

for, and the owner should use her for the purpose for which she was constructed. Unfortunately, some men change their minds after the yacht is delivered, and want to race a cruiser, or cruise a racer. It is not fair to the designer or the builder, and it may rightly be termed the "abuse," instead of the use of an auxiliary—or, for that matter, of any yacht.

It was on May 17th, three years ago, that eleven yachts started in the memorable ocean race from Sandy Hook Lightship for the magnificent trophy offered by the German Emperor. The goal was that bleak headland on the Cornish coast, where the twin lights of the Lizard guide the mariner in and out of the English Channel. It proved to be the fastest and best race ever sailed across the Western ocean by yachts, and it was won by an auxiliary—Wilson Marshall's three-masted schooner Atlantic. That able craft, commanded by Captain Charles Barr, covered the distance from Sandy Hook to Bishop's Rock Light, Scilly Islands—2,964 nautical miles—in 11 days, 16 hours, 22 minutes, and the whole distance to the finish off the Lizard—3,013 miles—in 12 days, 4 hours, 1 minute, showing a speed average of 10.32 knots an hour for the entire passage.

This was surely a performance to be proud of, for he had not only won the cup, but he had established a new ocean racing record that is likely to stand for some time. Only one other approaches it, that of the schooner Sappho, which, in 1869, covered the distance from Sandy Hook to Queenstown in 12 days, 9 hours, and 36 minutes, but the distance was 100 miles less than that sailed by Atlantic.

So here we have an auxiliary, whose chief motive power is in her sail, the engine being used principally to run the dynamo and refrigerating plants, to hoist the sails and to make a harbor at night and in calm weather. The propeller, which is of the feathering type, was unshipped and the aperture closed for the ocean race, as were those of the other auxiliaries—Sunbeam, Utowana, Valhalla and Apache, although her designer, William Gardner, declares that it would not have made a particle of difference in her speed if the wheel had been left in position and feathered.

Atlantic measures 185 feet over all, 135 feet on the water line, 29 feet 6 inches beam and 17 feet 6 inches draft, in racing trim. She has a long floor like Sappho and modern ends, but they are not carried to the extreme of the racing boats built under the old rule. Her overhangs are sufficient to prevent her diving in a seaway, but fine enough never to pound. She possesses sufficient draft to enable her to carry sail and to prevent rolling. Her designer is authority for the statement that in a three months' cruise in the West Indies, the rolling never exceeded nine degrees.

In a full lower sail breeze, carrying no topsails, Atlantic covered the distance from New London to Newport at an average speed of 15 knots an hour. It was a "run" to Race Rock, a "reach" from there to Point Judith, close-hauled work from there to Brentons' Reef Lightship, and windward work from there to Fort Adams, Newport. Her time was 2 hours, 41 minutes. In the last ocean races for the Cape May and Brentons' Reef Cups, she won both trophies easily, against Endymion, Resolute and other schooners.

Another yacht that took part in the ocean race and one that deserves more than a passing mention, was Lord Brassey's three-masted topsail schooner Sunbeam, famous the world over as an efficient cruiser, for there is hardly a port in the old world, or the new, that she has not visited. Sailing on July 6th, 1876, from Cowes, on one of her cruises to India and China, she covered 35,373 miles in ten months and of this distance she sailed 20,394 and steamed 14,979 miles. Her length for tonnage is 157 feet, beam 27 feet 6 inches, draft 13 feet 9 inches, area of midship section 202 square feet. Her average daily consumption of coal was four tons, which gave her a speed of 8 knots in smooth water her engines being of 70 nominal and 350 indicated horsepower. In the ocean race against Atlantic and other modern yachts, she was the sixth boat to arrive, having covered 3,093 miles in 14 days, 6 hours, 25 minutes. Her average speed for the

SAVING FUEL. CONSTANCE SCUDDING ALONG IN A GOOD BREEZE. THIS AUXILIARY WAS BUILT IN MAINE IN 1903, IS 125 FEET OVER ALL, 85 FEET WATER LINE, AND IS PROPELLED BY A 4-CYLINDER GASOLENE ENGINE.

whole distance was 9.03 knots an hour, and her best day's run, 282 miles. She was beaten by only four hours by the big ship Valhalla. This vessel's best day's run was 310 miles.

One of the first, if not the first of the large auxiliary yachts to fly the American ensign, was the three-masted steel schooner Sultana, designed by J. Beavor Webb and built in 1890, for the late Trenor L. Park of the New York Yacht Club. Sultana, which measures 187 feet over all, 155 feet water line, 27 feet 6 inches beam, and 14 feet 6 inches draft, is equipped with triple expansion engines of 500 horsepower; the cylinders are 13, 24 and 33 inches in diameter respectively and have a 24-inch stroke of piston. Sultana was specially built for cruising around the world, but she never went farther than the Mediterranean.

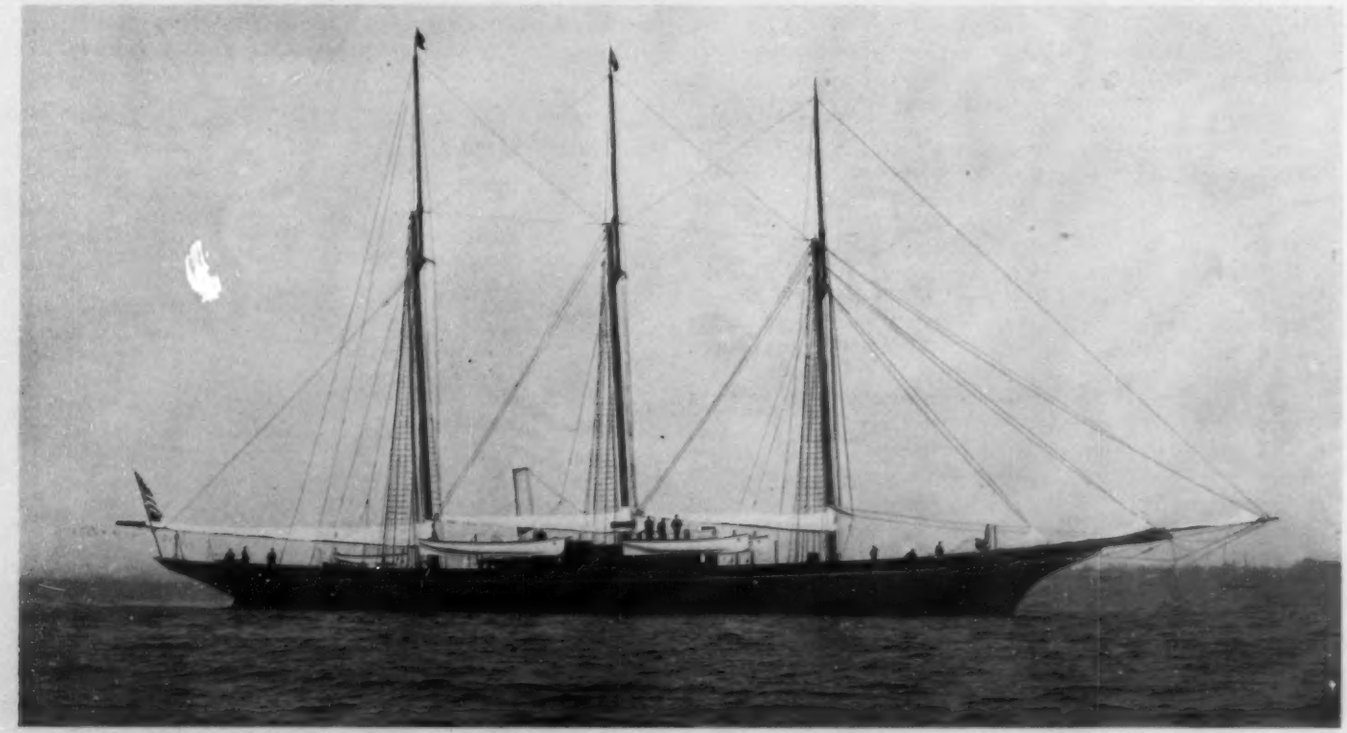
GADABOUT, A SCHOONER-RIGGED AUXILIARY STEAM YACHT, ONE OF THE FIRST "TWO-STICKER" CRAFT EQUIPPED WITH AN ENGINE.

One of the best and most luxuriously fitted auxiliary yachts of American construction is the three-masted steel schooner, Utowana, built at Philadelphia for W. W. Durant of the New York Yacht Club in 1901, from the design of J. Beavor Webb. Although sixteen years old, her hull and interior fittings are in first class condition. Allison V. Armour, her present owner, entered her in the ocean race for the German Emperor's Cup, and she crossed the finish line only 41 minutes astern of the crack yawl Ailsa, having sailed 3,101 miles in 14 days, 11 hours, 51 minutes. She was only eight hours, 58 minutes in the wake of the big Valhalla. Her average speed was 8.91 knots an hour and her best day's run 292 miles.

Utowana's principal dimensions are: 190 feet over all, 155 feet water line, 27 feet 6 inches beam and 14 feet 6 inches draft. She, like Su tana, has triple expansion engines. They are or 280 horsepower and the cylinders are 10, 16 and 25 inches in diameter respectively and have a 20-inch stroke.

The little wooden schooner, Gadabout, was the first of the present type of auxiliary that would sail fast, steer well and "stay" quickly, and one of the first of the two "sticker" auxiliaries that was equipped when built, with an engine. She was designed by Beavor Webb for E. M. Fulton, who wanted her to go cruising on the coast of Labrador. She turned out to be a most useful craft under both sail and steam.

Perhaps the most interesting pair of auxiliaries that are seen in these waters every season, especially on the cruise of the New York Yacht Club, are the two Intrepids. Both were built for Lloyd Phoenix of the New York Yacht Club, who is first, last and all the time, a thorough yachtsman of the deep sea cruising order, who knows what he wants in a ship, and gets it. Both these yachts were designed by Beavor Webb, the first one, now known as the Invincible, in 1892, and the second in 1903.



A LARGE TYPE OF POWERFUL AUXILIARY, UTOWANA. IN THE OCEAN RACE FOR THE KAISER'S CUP SHE SAILED 3,101 MILES IN 14 DAYS, 11 HOURS AND 51 MINUTES. SHE HAS TRIPLE EXPANSION ENGINES OF 280 HORSEPOWER.

In the first one, Captain Phœnix made many deep sea cruises, notably the one where he obtained for the government the ball and log book of the U. S. S. Kearsarge, the old warship that had been wrecked on Roncador Reef, in the West Indies.

Captain Phœnix with his guests was on board the Intrepid, lying off Kingston, Jamaica, when the American Consul received orders to get the bell and the log book. Captain Phœnix offered to search for them, and he sailed at once for Grand Cayman, a small island in the Caribbean Sea. Hearing there that the natives on Cayman Brac, another coral island, had gotten everything worth saving from the Kearsarge, he sailed the Intrepid there, and soon bargained for the bell and log book, which he subsequently turned over to the government with his compliments.

A BARK-RIGGED TYPE. THE AUXILIARY, APACHE, WHICH USES CANVAS AS THE SUBSIDIARY MEDIUM. SHE MEASURES 198 FEET OVER ALL AND HAS TRIPLE EXPANSION ENGINES.

The late Intrepid is one of the most seaworthy schooners afloat. Aloft and below she is the embodiment of what a deep sea auxiliary cruiser should be. Her owner, who was formerly an officer in the United States Navy, is a navigator, and he takes keen delight in making use of his knowledge and experience in that direction, by handling the Intrepid under both steam and canvas. The yacht was built in 1903. Her chief dimensions are: 171 feet over all, 125 feet water line, 28 feet beam, 16 feet draft. The old Intrepid is seven feet longer on the water line, but she has a foot less beam and 3 feet less draft. A two-cylinder compound engine, with two water-tube boilers of the "Yarrow" type, is the auxiliary equipment of the newest Intrepid, and Mr. Phœnix has found it ample to drive the yacht when occasion demands.

Witoco II is a good type of the keel auxiliary schooner. She was designed by Henry J. Gielow and built in 1905, for W. T. Colbron. She is equipped with a three-cylinder engine of 40 horsepower. In last year's outside race to Marblehead, Witoco averaged 7.65 knots an hour. She was not entered in the race, but acted as convoy to the competitors.

From the board of the same designer came the yawl Fidelio, one of the first of the smaller type of auxiliary. She was built for J. Fred Ackerman, of the Atlantic Yacht Club. After using her several years, he sold her to H. W. Tyler, of Philadelphia.

Speaking of the reliability and safety of the modern gasolene engine, as applied to a small auxiliary yacht, Gielow said the other day, "Not a great amount of power is required. These motors of to-day are, with a few exceptions, reliable enough, if they are properly taken care of. All that is needed is an engine that will drive a boat from four to five miles an hour, to get her into port. With sensible installation and reasonable care, no disastrous results may be anticipated from the use of a gasolene engine of to-day."

The 64-foot auxiliary yawl, with a 50-horsepower engine and a sail plan of some 4,000 square feet of canvas, built this spring for Mr. J. M. Goetchius from Gielow's design, is a good illustration of the modern type of auxiliary.

Commodore Amory Gardner, of the Eastern Yacht Club, has an auxiliary for his flagship. She is the keel schooner Constance, designed by E. F. Small and built in 1903 at Bootle Bay, Maine. Her chief dimensions are: 125 feet over all, 85 feet water line, 24 feet 2 inches beam and 12 feet draft. She has proved an excellent type of cruising auxiliary.

Still another Boston schooner that has attracted much attention is Comanche, owned by Augusta Hemenway. She is 71 feet over all and 46 feet on the water line. Her designer was Arthur Binney.

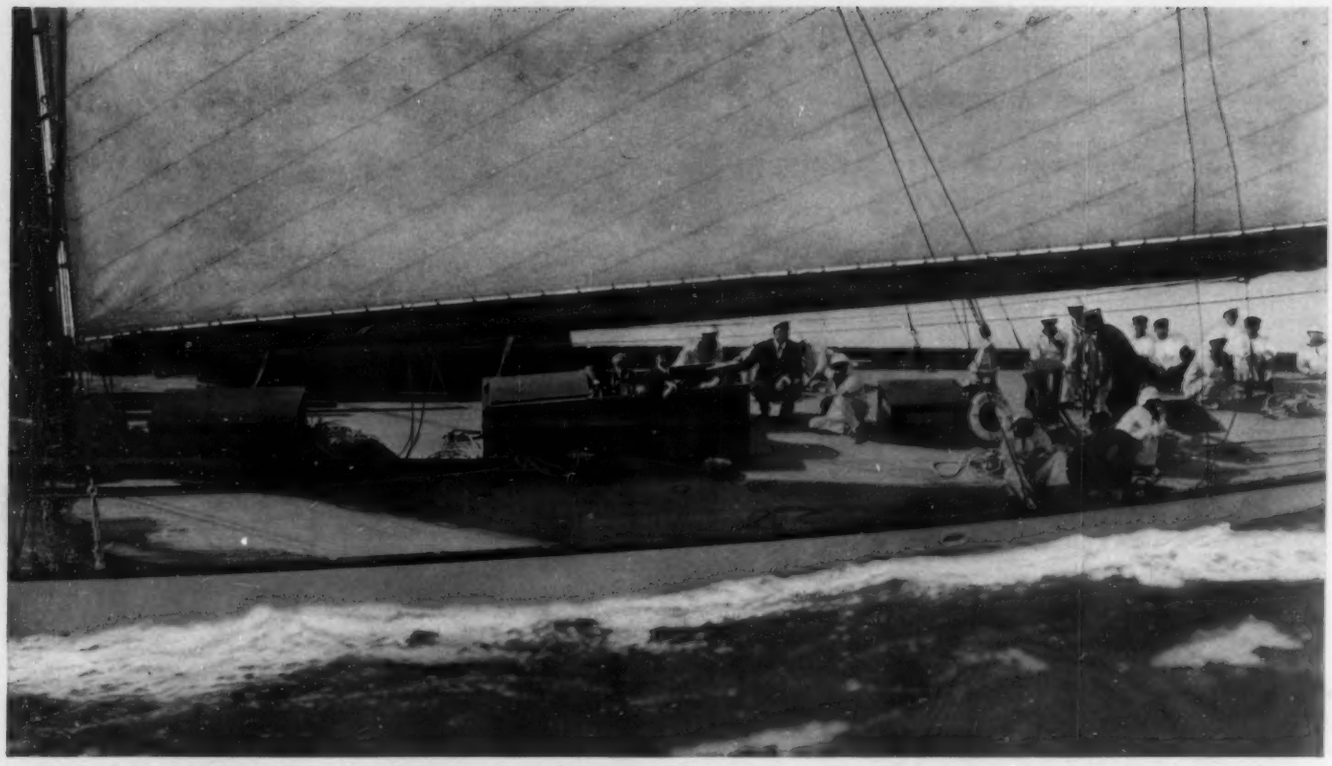
Dr. Frederick C. Cobb, of Boston, is the owner of a tidy little auxiliary schooner, named Winnebago, of 52 feet over all and 35 feet water line, which was designed for him by Crowninshield.

# The Month in Yachting

Photographs by Edwin Levick, Underwood & Underwood, and courtesy of the Gas Engine & Power Co. and Charles L. Seabury & Co., Cons.

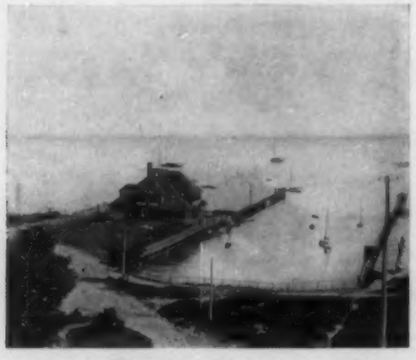
PLANS for the international power boat contest for the British International Cup which was won last year by Commodore Schroeder's flyer, Dixie, on Southampton Water, England, are proceeding apace. The date has been set for August 1st and as before intimated the course will be Huntington Harbor, Long Island Sound. So far as sailing goes this course at the outset may be pronounced ideal. The water is generally smooth and there is plenty of room.

At the same time this may be said: a more inaccessible place for a race of any sort could not have been selected. This may not be a matter of consequence to those who are to race, or to those who have craft of some sort in which to journey to the scene. But it does signify great inconvenience to any who expect to view the event from the shore. Not that there are no vantage points; there are, once you arrive at the bay, but the point is to arrive there. Trains on the Long Island road go to Huntington proper, and there is a trolley line which will carry you into the outlying country for two or three miles. Thereafter walking, motoring or driving for the two or three additional miles left uncovered by trolley line or railroad, are the alternatives.



CHARLES BARR AT WHEEL OF THE SCHOONER INGOMAR. OPPOSED TO QUEEN AND ELMINA IN 1907, HER SHOWING WAS NOT GOOD. SHE WILL NOT GO INTO COMMISSION THIS YEAR.

All in all, the trip is tiresome and stupid. It may be said that when the Motor Boat Club of America held races on the Hudson, the outpouring of spectators was not in any measure sufficient to indicate any amount of public interest in racing of the kind. But the point as I conceive it is, that all the public needed was an awakening as to the pleasure, the excitement, the genuine thrills experienced in attendance upon contests between evenly matched high powered motor boats. This, I believe, has been generally recognized by motor boat men.



MILWAUKEE BAY AND HOME OF THE MILWAUKEE YACHT CLUB. A ONE-DESIGN CLASS HAS BEEN FORMED HERE FOR 1908.

Now, if public interest in such matters is ever to be aroused, certainly nothing more potent than an international contest between American and foreign boats, built expressly for the race, could be devised. There is something extremely absorbing about a contest of this kind. It fills the public mind; it makes a powerful appeal to patriotic ardor and there seems little doubt but that the match, if it were to be held where all could see, would take rank with any international event whatever.

As it is, the interminable trip to Huntington will present difficulties which will not appeal at all to landlubbers. Overlooking the scene of the race is a fashionable restaurant, a château, where food may be purchased at fabulous prices, but otherwise there is a vast wilderness so far as hotels and stores are concerned. It is to be regretted that some more convenient course was not selected, but if other and more important considerations governed the Motor Boat Club of America in its decision, philosophy, obviously, is the only course.

It is still a question as to how many boats will be named as candidates for the defence of the cup. If there are numerous entrants elimination races will be held over the Huntington course on July 11th. In the actual races not more than three boats representing the countries involved may compete. The course shall not be more than thirty-five nor less than thirty nautical miles. The racers shall not exceed 39 feet 11½ inches over all. The only engine restriction is that the boats shall be fitted with such mechanical power as will drive them astern at a rate of speed not less than four knots an hour in still water. At the present time, three boats are under construction and there is likelihood of more being built.

Speaking of building reminds one of the apathy which characterizes this industry at the present time, especially as regards sailing craft. Not a quarter as many windjammers are being built this year as last and yards are particularly concerned with the output of power hulls which will be fair. Plainly constructed motor boats for the most part will be launched for the first time this spring, although there are a few boats of large size and type generally advanced over last year building. The term "advanced" is used perhaps inadvisedly since there has been no especial departure this year over last year's types. One thing, though, which I rejoice to see, is the last of the output of paper hulled racers which last perhaps for a season, but not more. In this connection the announcement for sale of a boat of this type, W. K. Vanderbilt, Jr.'s Hard Boiled Egg, is interesting, not to say significant. She cost $8,000, and was advertised for sale in a New York newspaper for $400.

In preparation for the Lipton Cup Races on Lake Michigan next summer, it is interesting to note that Morgan Barney has received an order for a sloop from a syndicate of the Illinois Athletic Club's yachting auxiliary. Mr. Barney, as the designer of the successful contestant in the past two regattas for the

NIAGARA IV, HOWARD GOULD, OWNER, WHICH WILL RACE THIS SPRING AGAINST W. K. VANDERBILT, JR.'S TARANTULA, THE DECIDING RACE OF A SERIES OF THREE. SHE WON THE FIRST RACE FOR THE CUP WHICH BEARS HER NAME.

Lipton trophy, has tremendous prestige on the Great Lakes and he told the writer the other day that he was immensely pleased with his order inasmuch as he has a strong idea that he can improve upon Cherry Circle. The boat will be built at Jacobs' and before she is shipped west the designer will try her out in an exhaustive series of tests on the Sound. The Illinois Athletic Club sailors should thus make a strong bid for Lake Michigan supremacy this year and with the schooner Valmore, a fast eastern boat purchased by a member of this club for participation in the Mackinac Race, the future for the Illinois Athletic Club is bright indeed. The last Lipton cup sloop to represent this organization was New Illinois. She was from the boards of Jones and Labord who have designed many a fast inland lake racer. But in this sloop they missed the mark completely. She was a failure from the outset as a racer, although a fairly good cruising boat.

While on the subject of Lake Michigan, it is fitting that a word of congratulation be extended to the Milwaukee Yacht Club whose members have ordered five yachts of one design at Muskegon, Mich. This signifies the first step in the revival of yachting in this beautiful lake port. The Milwaukee Yacht Club burgee has been pitifully absent of late from regattas on the Lakes and it is high time that conditions were rectified. Milwaukee Bay is one of the most beautiful bodies of water in the world—some have compared it to the Bay of Naples; the facilities as compared for instance to Chicago are infinitely superior. Success will attend this one-design class; new boats will be built and new classes will eventually be formed. The admission of junior members should tend to draw sailors from the smaller Wisconsin lakes, and all in all we may look for a season in this city which will mark the beginning of a new era in yachting there.

The joy of the nations will be increased when Howard Gould's Niagara and William K. Vanderbilt Jr.'s Tarantula meet in a race for the Niagara IV Cup this spring. Howard Gould offered the cup primarily and two races have been held, each boat having won an event. In the first contest Niagara IV, with the bets all against her, steamed right out ahead of the Vanderbilt boat, and won finally by 3 minutes and 59 seconds over a 39-mile course. The next race, however, Tarantula came into her own, defeating the rival craft by 2 minutes and 48 seconds, covering the course in 1 hour, 53 minutes and one second. There is an absorbing story to be written of the way in which Tarantula was tuned up to turn the tables on the Gould craft, but as yet the full facts are not attainable. The second race was something of a disappointment to Mr. Gould since in addition to the cup, a side bet of $5000 was made. The matter thus rests. Both owners are confident of success this spring. Niagara IV is being fitted with new boilers at Morris Heights while Tarantula is being overhauled in Hoboken.

The elimination of the Class B schooners in the coming regattas on the Sound is sad news. First came word that Ingomar would not go into commission and now Elmina is out. Queen having no boat to race against, will not go into commission, at least until the cruise at which time the King's Cup Race may prove an attraction. Ingomar's withdrawal was foregone. Going into commission last year with a fine European record behind her and with the redoubtable Charles Barr at the stick, great things were prophesied of her. But they were not realized. In heavy airs she was formidable, but under other conditions she was not even a factor in the large schooner events.

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THE TURBINE STEAM YACHT, TARANTULA, OWNED BY W. K. VANDERBILT, JR. SHE WON THE SECOND RACE FOR THE NIAGARA IV CUP.

Frederick F. Brewster, the New Haven yachtsman, has decided to put his ninety-foot schooner, Elmina II, in commission this summer, and J. Rogers Maxwell will have his Herreshoff ninety-footer, Queen, in racing trim for the New York Yacht Club cruise.

# The Lipton Cup for Twenty-one Footers

By OWEN ROBERTS

NEW ILLINOIS. A BOAT WHICH FAILED TO MAKE GOOD IN 1906 BUT IS NOW BEING ALTERED IN VARIOUS WAYS IN PREPARATION FOR ANOTHER TRY FOR THE LIPTON CUP.

WHATEVER may be said of the yachting season throughout the country certainly no apathy is to be discerned among those who are preparing for what has been called the classic of the Great Lakes, the contest for the cup offered by Sir Thomas Lipton as an incentive to the building and racing of twenty-one foot sloops. It is now regarded as practically certain that no less than eleven fleet single stickers will meet in Chicago late next summer in this event.

With the Chicago Club back in the fold every one of the important yachting organizations of the neighborhood will be represented by one or more boats.

The tentative entry list as it now stands is in every sense alluring. The Columbia Yacht Club under whose auspices the event is to be held will have three sloops at the line, Columbia, a new flyer, Yo San and Quien Sabe. The new defender Columbia is being built at Oshkosh for a syndicate headed by Commodore McGuire. She has progressed so well that the planking is about completed. In many ways, it is said, the craft will be a novelty. In the first place she will present a combination of keel and centerboard, and all in all her first appearance may be attended w th some such furore as marked the appearance of New Illinois and Billposter with their lateral rudders. Columbia will measure thirty-six feet over all with an extreme beam of nearly eleven feet. The limit of sail spread will be 950 feet.

As to Quien Sabe it may be said that she will prove a worthy representative of the Club. In last year's race she finished third in two of three events and was a factor from start to finish. Yo San last year did not do so well, but that there are possibilities in her many believe.

The Chicago Yacht Club will enter two challengers, a new sloop and D. K. Drake's Sprite which gave the Detroit boat, Ste. Claire, close if unsuccessful races for the Lipton trophy in 1903-4. There are high hopes for the craft now building. In every way she will be a Chicago product, having been designed by A. G. Cuthbert of that city who is also building her. She will have a fin keel and the intention is, it is understood, to make a ghost of her, a craft for light airs or moderate winds. The Jackson Park Yacht Club will enter Jackson Park, formerly the old "sidewalk" Milwaukee, a freak of freaks but a flyer. She was the craft which pushed Cherry Circle hardest in last year's race and there is no reason to believe she will not figure prominently next summer.

Then comes the Chicago Athletic Association with a grand trio of racers, Cherry Circle, twice winner of the classic prize; C. A. A. which as Spray, hailing from Detroit, won three times the Great Lakes championship and La Rita II, a craft from Mr. Mower's boards, which in Canada under the name of Raven made a good record. The New Illinois Athletic Club is out for the prize in earnest. After failing to secure Nat Herreshoff as designer of a new challenger, Commodore Schick went East and engaged Morgan Barney who designed Cherry Circle in collaboration with Charles D. Mower. Mr. Barney says that he has no doubt but this crack boat may be improved upon and he s sett ng about the task of laying down the lines with a great deal of confidence. New Illinois, the Jones and Laborde bilge rudder scow, will also go in although from her exhibition in 1906, not much is expected of her. Still she may prove a surprise to the nautical wiseacres for her designers, it is said, have seen a way by which she may be radically improved. If such proves the case so much the better. It is all very well to cry freak when speaking of her, but for that matter none of these Lipton cup boats would stand out as being remarkably wholesome. Commodore Vilas, of Milwaukee, says that Mendota will come down for the event and other possibilities are Borealis, Ste. Claire, Cleveland, Toledo, Otsiketa and a new Canadian boat.

Surely better prospects could not be desired. Things have also moved out this way in regard to the Mackinac race. The Chicago Yacht Club has voted to allow yachts participating in this event to carry any sort of topsails that the captains may desire. This action came about through the protest of yacht owners who were inclined to regard the rule as unjust and arbitrary. The decision not to change the objective point from Mackinac to Harbor Springs is generally commended. The race will start on July 25 at 3 o'clock in the afternoon. Vanenna will of course enter this event as will Vencedor which has won the long race twice. She will have as new rivals this year two eastern boats, Aspirant, a William Gardner boat formerly sailed with rare success by Wilmer G. Hanan on the Sound, and the schooner, Valmore. The Valmore is to be brought from New London, Conn. by way of the Atlantic Ocean, Gulf of St. Lawrence, St. Lawrence River and the Great Lakes, more than 3,000 miles, all told. William Hale Thompson expects to sail the schooner the greater part of the way on her westward journey and he sees no reason to doubt that he will have her in Chicago in time to start in the race to Mackinac Island. She will carry the flag of the New Illinois Athletic Club and will in every way prove a splendid addition to the Chicago fleet of racers and cruisers.

Valmore was designed by Fred D. Lawley and built by the Lawley Corporation of Boston, Massachusetts. Mr. Lawley has become famous for his skillful work in designing and building fast cruising schooner yachts. This boat was built originally for Mr. John M. Richmond of Providence, Rhode Island, in 1903. Speed as well as cruising qualities was a factor given due consideration in working out the design, and the lines show a clean easy form with good ends and a fair amount of displacement.

Her dimensions are as follows: Length over all, 81 feet, 3 inches; length water line, 51 feet, 3 inches; Overhang forward, 13 feet, 6 inches; Overhang aft, 16 feet, 6 inches; Breadth extreme, 16 feet; breadth water line, 15 feet; draught extreme, 10 feet; draught to rabbet, 5 feet, 3 inches; freeboard bow, 5 feet, 6 inches; freeboard stern, 3 feet, 10 inches; freeboard least, 3 feet, 4 inches.

We are not in as close touch here with the inland lakes as we should like to be, but word comes that this will be a banner year in yachting in the Northwest. Particular attention will be given this coming season to motor boat racing. Several new power craft of the racing type are under course of construction for summer residents on White Bear lake. Owners of motor craft on the Mississippi river are talking of reviving the old St. Paul Yacht Club. The craft on the river has increased in numbers until there is a small army of boats and more are building for next year.

WHALING BARK, CANTON, HOMEWARD BOUND WITH A FULL FARE. THE OLDEST WHALESHIP IN THE SERVICE.

# The Whalers

BY SWIFT TRANSITION THE VISITOR TO THE NEW BEDFORD WATER FRONT STEPS INTO AN ATMOSPHERE OF DAYS LONG GONE—HERE STAUNCH, SQUARE STERNED WHALERS LEAVE IN SEARCH OF OIL AND BONE—THE 113 WHALING VESSELS OF 20 YEARS AGO HAVE DWINDLED TO A DOZEN, BUT IT IS A BRAVE AND ENERGETIC FLEET

By STUART STEVENS SCOTT

Photographs Collected by the Author

AT THE quaint old town of New Bedford, Massachusetts, the industry of whaling is carried on to-day in almost precisely the same manner as it was seventy years ago with the exception, perhaps, that the once great fleet that berthed at its wharves in 1854, numbering 113, has dwindled until now there is scarcely a dozen sail.

DECK SCENE ON A WHALER. HUNTING GEAR READY TO BE STOWED BELOW.

All over the world the whaling industry has declined and the latest issue of the Whalemen's Shipping List shows that there are but 36 vessels engaged in the business. Sixty years ago there were no less than a thousand whaleships scouring the seven seas and seven hundred and thirty of these flew the American flag. American whalers in those days were as common relatively as British tramps to-day.

The development of petroleum has been responsible for the decadence of whaling, and this is illustrated best by the fact that in 1863 sperm oil was quoted at $2.55 per gallon whereas to-day the price is but 51 cents. Whalebone, however, has maintained a good price and as there is yet a demand for sperm oil for certain lines, such as lubricating oil for watches and delicate instruments, there are a few ships that still go for bone and oil.

The most remarkable feature of whaling is that although the industry is one of the oldest in this country there has been little or no development in methods pursued, and what advance there has been made has been in the employing of a few steam vessels and in the adoption of modern rig and equipment to the sailing craft. The steamships are used mostly in the Arctic regions where their power enables them to dodge ice floes and to escape the danger of being nipped, a fate that has overtaken scores of fine ships in days gone by. Then, too, these vessels use their steam for trying out the oil instead of boiling it as is done on the

sailing craft. Donkey engines for hoisting are modern features on the sailers, while the tanks of iron have supplanted those of wood.

In the apparatus used in the capture and killing of the mammal, there has been practically no change in half a century. Of the death-dealing appliances the shoulder bomb-gun and lance play the most important parts. The former weapon, which is not unlike an ordinary musket of large proportions, was invented 40 years or more ago by Captain Eben Pierce, a Down Easter, who made and used the first one at Honolulu. The projectile consists of a brass tube from four to six inches long and from an inch to an inch and a half in diameter filled with gunpowder. Like the modern torpedo, it is not intended to explode until it has penetrated well into the flesh of the whale, but then its effect is almost instantaneous, producing a fatal wound.

The lance, the first weapon used, is still in vogue; many whalemen preferring it although it is necessary to take a small boat alongside the whale to place it, whereas with the bomb-gun, it is not necessary to go nearer than thirty feet to the victim. As it requires more skill to use the lance, and pride in whaling is just as keen as in any other industry, this instrument continues to be part of the equipment of every whaler.

The process of "cutting in" and "trying out" a whale is almost exactly the same as it has always been, save in the few instances where steamers are employed, and the modern whaleship at work is just as greasy as the one of earlier days.

There are now three classes of whalers—those that hunt only for sperm whales, those that hunt for both sperm and right whales and those that hunt for right and bowhead whales. The length of a whaling voyage nowadays varies from three months to three years, but in the palmy days a vessel rarely returned within four years and was frequently gone five. Nearly all of the old-timers went in search of both the right and sperm varieties, and as the habitats of these species were widely separated it necessitated cruising the warm and cold seas alike.

WHALESHIP NIGER, A FAMOUS CRAFT OF THIRTY YEARS AGO. FAKE GUN PORTS TO GIVE HER THE APPEARANCE OF A MAN O' WAR TO FRIGHTEN WARLIKE NATIVES, A RUSE ADOPTED BY NEARLY ALL MERCHANT VESSELS IN THE SOUTH PACIFIC AND ALONG THE CHINESE SHORES.

The officers and crew of a whaler under sail number about thirty-three men and the old way of shipping on shares still holds. All hands, from the skipper to the cabin boy, go on a "lay" so that when the voyage is ended, the catch figured out, expenses of the vessel deducted and all debts made good, the "divvy" is made. The lay of a captain may be one-fourteenth while that of the cabin boy may be one two-hundred-and-fiftieth, the latter portion being known as the "long lay."

The fitting out of a whaling ship that is to be gone on a cruise of three or four years, for it is allowed that while she may return in as many months the lengthy voyage is always considered as a possibility, is no easy matter. It is true that the ship may drop in at other ports to replenish her stores, but it is deemed wiser to start well provided against contingencies.

The vessel is hauled out and carefully gone over from stem to transom. Every timber is examined and renewed if needed. Each seam in her hull is caulked and paved, she is recoppered, her decks smoothed and then, after being rerigged and every sail mended, she gets a coat of paint and is launched as well found as it is possible to make her. But sometimes, when they return they are in such condition that the old men of Gaff Topsail Corner wonder how they got home at all.

Glistening with paint but with her hull empty and only her lower masts standing, the whaler is towed to a berth where the second stage of outfitting begins. This consists of putting on board her equipment and stores. There are spare ropes by the bale, two or three complete suits of sails, bolts of canvas, casks of paint, varnish and tar and many other things for the ship herself. Then there goes on board many small timbers and planks of cedar for the small boats, for it is not unusual to have a boat or two stove in by a whale and these little craft must be repaired by the ship's carpenter.

Last, but not least, are the stores for the crew. The "salt horse" of ye olden days no longer reposes in the "harness" cask as tinned meats have largely taken its place, while canned vegetables form a good part of the fare. After the steward has seen that the last box is stored away and the invoices tallied the slop chest follows. This is an institution as old as ships themselves and its origin dates back too far for memory or even legend, but it is the same to-day that it was in the beginning—a store of clothes, oil skins, tobacco, pipes, needles and many other things, all of which are sold to the crew by the skipper who derives from it some little profit for his trouble and investment. The slop chest, by the way, has been the cause of more than one marine tragedy when masters have been too keen on making money out of it, charging extortionate prices, and more than one mutiny with its accompanying horrors of murder and marooning has had its origin in the chest. Therefore this institution may work good or evil, and by it many a skipper has been beloved or hated according to how he handled it.

After the last sail has been bent and the ship is ready to sail her small boats are laid alongside. They are twenty-eight feet long, six feet beam, round bottomed and with a deep sheer. Each is fitted with a centerboard and masts and sails, and two tubs of tow lines are stowed away under the thwarts. A boat's crew consists of six, an officer, boatsteerer and four oarsmen. Their armament includes four or five harpoons, bomb-gun, lances, a hatchet or two, four knives, a fluke spade, boat hook and "waif" flags as quipment for the hunt. In case of separation from the ship by fog or storm, there is a drag to which the

Whaling Bark, Platina, Drying Her Sails on the Day After Her Arrival Home. Whaleboats in the Foreground.

Whaling Schooner, E. B. Conwell, Ready to Sail. Fore-'n-Afters of this Type make Shorter Cruises than the Square-riggers.

Bark, Canton, Drying Sails After a Cruise Taking Three Years and Several Months.

WHALING BARK, PLATINA, ON THE RAILWAY. THE FIRST STAGE OF FITTING OUT FOR A VOYAGE.

boat lays in case of heavy weather, a keg of bread, a breaker of water, a keg containing a lantern, candles, matches and pipes and tobacco, a package of "First Aid to the Wounded" and a compass. Despite the burden, the little boats are fine, able craft. They ride high and buoyant and can stand being towed at 10 or 12 miles an hour through considerable sea without danger.

The first days out are busy ones for all hands for there is much preparatory work to be done. The ship has to be got into shape and if there are many green hands on board they have to be drilled in small boat handling. The crow's nest is constantly manned in two hour shifts and throughout the day the ship is driven at her best pace. At night she is virtually hove to so that every part of her course can be covered. When a whale is sighted there is real activity.

Boats usually work in pairs unless there are many whales in the neighborhood and then the whalemen take chances. With oars muffled they row close to the whale and the first warning the monster has of danger is the prick of the harpoon or the terrible bomb. Lightning moves but little quicker than the wounded mammal as he plunges for the bottom while the harpoon line sings over the edge of the tub. With the use of the bomb there is no sport at all for the projectile when it explodes inflicts a wound that soon proves fatal.

Playing a whale with a line is exciting and dangerous, particularly if it is a sperm. He will fight, turn on the boat and sometimes smash it to flinders. It is the duty of the second boat to stand by in event of this occurring.

When the monster is fagged out and lies motionless with exhaustion upon the surface then the critical part of the killing takes place—the placing of the lance. Again the boat lays alongside, and the harpooner plunges the long, sword-like weapon in to the hilt. Instantly the whale sounds again, but the death-blow has been inflicted and in a little while the whale comes to the surface and expires. It is curious to note that practically every whale dies with its head toward the sun, lying almost due east and west, and when it has expired, it rolls on one side, exposing a fin, hence the whalers use the expression "fin out" when referring to death.

The carcass is next towed alongside the ship, tail to the bow. All whalers "cut in" on the starboard side and a portion of the vessel's rail is removed and a platform rigged out for the cutters who work with long-handled spades. First a hole is cut near the eye while other cuts are made about four feet apart, running around the body until the "blanket" piece is marked out. Then from a block in

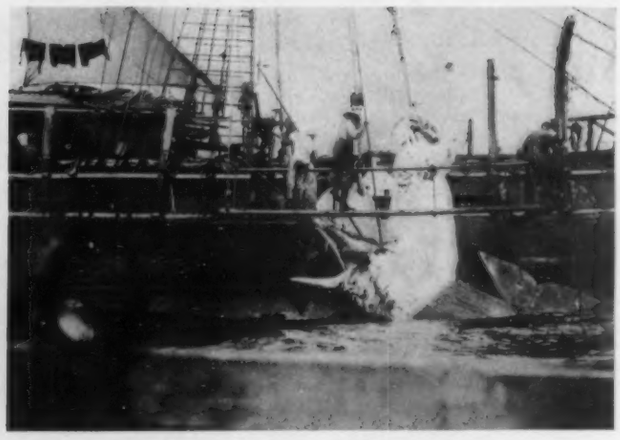
Whaleship Berth at New Bedford. Bark Sunbeam, in the Foreground.

Coopers at Work on Casks as the Ship is Fitting Out for a Whaling Voyage.

Try Pots and Blubber Hooks. In these Pots the Blubber is Boiled. The Hooks are Used in Peeling Off the Whale Skin.

Whaling Schooner, John R. Manta, Outward Bound from New Bedford.

JUST HOME FROM A VOYAGE. DISMANTLING THE SHIP. BARRELS OF OIL IN FOREGROUND.



"CUTTING IN," SHOWING THE "BLANKET PIECE" BEING RAISED LIKE A PIECE OF SOD.

the rigging is lowered a fall with a blubber hook which is attached to a hole in the "blanket." The windlass is manned and the "blanket," like a great piece of sod, is raised, the cutters using their spades meanwhile to strip it off. This blanket of blubber is usually about a foot thick, four feet wide and from ten feet to fifteen feet long, according to the size of the whale. In the meantime another cutter is separating the head from the body, a tedious task but time well spent if the mammal is a sperm. The head is divided into three parts—the case, the junk and the bony part. The first is the upper part and has a cavity filled with clear oil known as spermaceti, sometimes as much as 23 barrels, which is the most valuable part of the yield. The relative value of the head is that it usually yields two-fifths of the entire carcass.

The junk is a wedge-shaped mass of cellular formation of flesh and also contains several barrels of oil. The bony part is the skull and the lower jawbone, and this is usually saved for making ornaments, canes and other novelties, called "skrimshoning" by the whalemen.

When the head and the last blanket has been taken on board the remainder of the carcass is cut adrift as food for sharks, and the labor of converting the blubber into oil begins. The "blankets" are cut into pieces about eighteen inches long and six inches wide and these are called "horse pieces." The latter are sent to the "mincing horse," a table where men with sharp knives slash them into thin slices that just hang together. These are known as "books," and they are then ready for the try pot. The pots are huge iron kettles placed on deck under which, on a platform of brick or stone, the fires are built. As the oil tries out of the blubber it is bailed out into copper receptacles to cool and is then barreled and stowed away in the lower hold. The residue of the blubber—the scrap—is thrown on the fire, and thus it may be said that a whale furnishes its own fuel.

The trying out is the hardest and most disagreeable part of the business, for it must be done quickly as there is danger of storms and then, too, the ship may be in a school of the great fish and no delays can be brooked. When the last pot has been emptied, there comes the job of cleaning ship. Everything below and aloft is grease and grime and is far from pleasant. If whales are scarce the work in all departments is light, but a short cruise and a return with a full fare means that there has been little idle time either fore or aft.

Despite the antiquated methods, the hardships and the toil, there is excitement and adventure in it, and as long as oil and bone shall prove of profit, there will be always a few hardy spirits who will ship on such voyages.

# How Much Oil Shall I Use?

By HERBERT L. TOWLE

Illustrations by the Author

IN MOST marine engines, both large and small, the rate of oil feed to pistons and bearings, as well as the choice of lubricant, is left largely to the discretion of the user; and the latter, till he learns his engine thoroughly, is often at a loss to decide between conflicting counsel to use much oil or little, or much oil in the bearings and little on the pistons. Consequently he is apt to fall back on some arbitrary rule to feed so-and-so many drops per minute to everything that can be oiled. In this "drop by drop" theory he is supported by the time-honored practice of oiling everything through sight feeds, whose rate of delivery, as it happens, is governed less by the real demand for oil than by the caprice of the owner, the openness of the oil passages, and the viscosity and temperature of the oil.

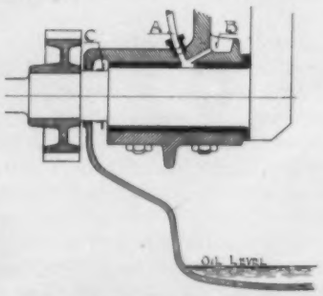



FIG 1. A WELL ARRANGED BEARING. OIL IS FED BY THE PIPE A AND THE SPLASH POCKET B, AND IS THROWN OFF AT THE OUTER END BY THE KNIFE EDGE RING C AND DRAINED BACK INTO THE CRANKCASE.

The fact of the matter is that no bearing ever got more oil than was good for it. The old idea of starving an engine down to the fewest drops per minute that would keep oil between the rubbing surfaces did not by any means result in maximum durability. This is particularly true of high speed engines, such as those used in most boats and all automobiles, whose bearings should be fairly flooded with oil, so that something like a steady stream flows through them, washing out any microscopic metal particles, and ensuring the maximum thickness of oil film between the surfaces. If the oil is fed, as fast as it will flow, to the center of the bearing on the unloaded side, it will be carried around by the shaft and will work out at both ends, thus substantially conforming to the principle just laid down.

It is obvious that feeding oil in this lavish manner implies that the oil escaping from the bearings should be collected, settled or filtered in some manner to purify it, and reused. Unfortunately many engines are so constructed that to do this is awkward or even impossible; and the question arises, how much oil is it advisable to use? Before answering this question, the user will find it well, if he uses the engine a good deal, to study carefully its arrangements for retaining the oil fed to it.

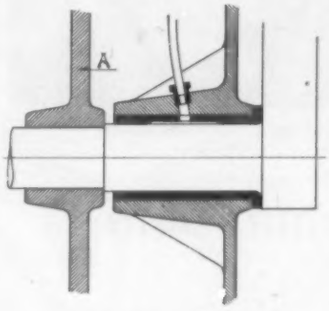



FIG 2. A BADLY-ARRANGED BEARING. OIL ESCAPING FROM IT GETS ON THE FLYWHEEL "A". SEE FIG 3 FOR THE CURE.

Modern machines with enclosed crankcases waste practically no oil. This result is accomplished by closing in the fore-and-aft end bearings of the crankshaft, so that the oil working out at these ends returns to the crankcase instead of dripping into the boat or creeping out on the flywheel. Again, such engines have the camshaft gears and bearings enclosed and oiled by internal splash. Such engines generally have their crankcases charged with oil up to the splash level, and the slight waste is supplied by mechanical feed to the pistons, to the main bearings, or to the crankpins, or to all three. This at the same time provides a separate oil supply, which prevents damage in case the oil in the crankcase gets low. Such engines are very economical of oil without sacrifice of lubrication.

Against this ideal condition we may have anything, from the open base "steam engine type" of engine to the crudely arranged enclosed crankcase engine with oil leaking at half a dozen points. If the engine is small, or is used only occasionally, the best thing to do is to feed plenty of oil, regardless of waste, and recoup its cost on the saving in repairs. If, however, the oil bill is considerable, it will be worth while to devise removable screens and pans to catch the oil thrown from the moving parts of the open base engine, and closures for the exposed bearings of the enclosed crankcase engine. In dealing with the latter, it must be remembered that to prevent the issue of oil from the end of a bearing is worse than useless, since it causes the oil to remain "dead" in the bearing till it becomes loaded with metal particles, which presently start cutting. It is always possible to chip a return groove under the bushing, and generally a knife-edge ring, a felt washer, or the like, can be fitted over the end of the shaft or bearing to help induce the oil to return by the groove provided. In Fig. 3 is shown a flywheel bearing rendered oil tight by an annular groove in the end of the bushing, a return passage, and a felt washer.

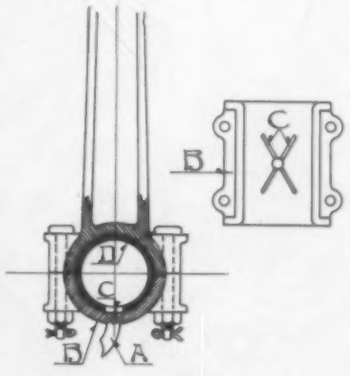



FIG. 4. A CRANK PIN BEARING ARRANGED FOR SPLASH LUBRICATION. THE TUBULAR BRASS SCOOP "A" IS THREADED AND SWEATED INTO THE BOTTOM CAP "B", AND A HOLE AND SHORT GROOVES "C" "C" ARE PROVIDED TO DISTRIBUTE THE OIL. THE UPPER HALF "D" OF THE BUSHING IS PREFERABLY LEFT WITHOUT OIL HOLES OR GROOVES.

If the main and crankpin bearings are arranged exclusively for lubrication independently of the oil in the crankcase, no benefit will be gained by increasing the crankcase supply. Unless provision is made for getting the oil to the bearings, it will do little good. Frequently, however, it will be worth while to provide oil passages and pockets to carry the oil splashed about in the crankcase to the main and crankpin bearings, thereby supplementing the regular supply. Fig. 4 shows a crankpin bearing improved thus. Whether or not this is done, the oil fed from outside may accumulate in the crankcase more rapidly than is desired, in which case it should be drawn off by a large petcock, screwed into the crankcase for that purpose, at the height of the oil level desired. The oil drawn off in this manner should be settled till it should become perfectly clear and safe for use a second time.

It is an excellent idea to add to the oil a minute quantity, not more than a level teaspoonful to a half gallon of oil, of the finest flake graphite, ground especially for that purpose. A larger quantity is liable to settle, and it is also unnecessary, because a very little graphite lasts a long time in the bearings. The small amount used in this manner will not interfere with the ignition.

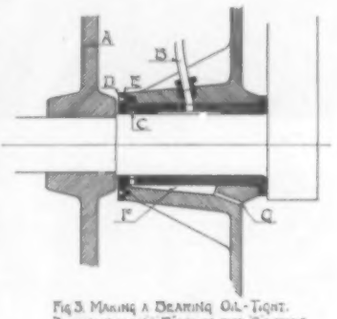



FIG 3. MAKING A BEARING OIL-TIGHT. "A" IS THE FLYWHEEL, "B" THE OIL PIPE, "C" A GROOVE TURNED IN THE END OF THE BUSHING, "D" A FLAT RETAINING RING, "E" A FELT WASHER, "F" AN OIL RETURN GROOVE CHIPPED IN THE CASTING, AND "G" A DRAIN HOLE.

It is common advice to use as little oil as possible for cylinder lubrication. In view of the fact that all oil leaves a certain amount of carbon deposit in the cylinders and on the piston heads, where in time it interferes with ignition unless removed, this advice has something to recommend it. On the other hand, it loses sight of the fact that the function of oil is to lubricate, and enough oil is better than too little. Some oils are not burned up as quickly as others when exposed to the flame in the cylinders: these are called high fire test oils. Again, some oils—of high or low fire test—leave less carbon in the cylinder than others. The oils of the highest fire test are apt to be quite thick, and it is possible to find thicker oil than will perform satisfactorily in the engine under consideration. The proper method is, first, to select the highest fire test compatible with sufficient fluidity, and, second, to get the grade oil, of the selected fire test, which carbonizes least. For equal viscosity a clear or pale colored oil is less likely to give trouble by carbonizing than a dark oil; but this test is not absolute, since some oils are inherently objectionable. When the right oil has been selected, it is well to use it with as much freedom as is possible. But clouds of white smoke in the exhaust are a sure sign of over-lubrication. They are also a sure promise of carbon accumulations on the piston rings and head, and elsewhere in the combustion chamber, no matter how highly purified the oil may be. A smoky exhaust is really permissible only in racing, with motors of unusual size.

It is worth mentioning here that the addition of a very slight amount of graphite to the oil in the crankcase will help the cylinder lubrication, if that depends wholly or in part on the crankcase splash. It is, in fact, safest to feed pure oil from the mechanical lubricator, and put the graphite only in the crankcase. The result will be the same, and there will be no danger of clogged oil passages.

Use a good quality of lubricant, and use enough of it. What may seem economy in the oil bill, may cut a big slice off the value of your engine when you come to sell it.

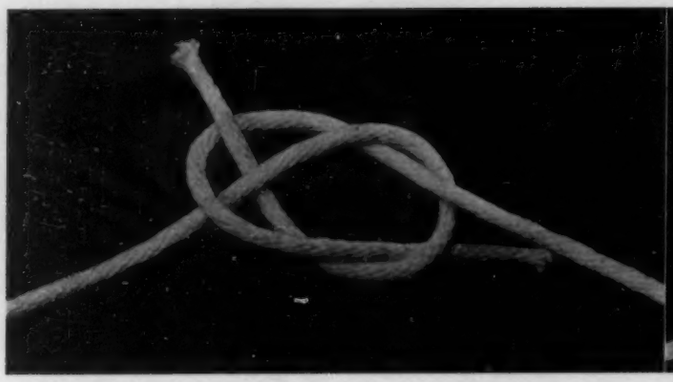


FIG. 1. SINGLE CARRICK BEND, USED FOR FASTENING TWO HAWSERS TOGETHER.

FIG. 2. SINGLE CARRICK BEND, WITH PARTS DRAWN TAUT.

# Some of the Less Common Knots and Bends

By WILLIAM E. PARTRIDGE

Photographs by Edwin Levick

THE amateur sailor, as he gains experience, and increases the length of his cruises, finds that the simple bends and hitches which answered every requirement for a week-end cruise or an afternoon sail, no longer meet all his needs. One of the first occasions in which something different from a common knot is required, comes when it is necessary to fasten two hawsers together. This is a task which is not likely to be necessary on an afternoon sail, but is pretty sure to come some time on a longer cruise.

Hawsers and large ropes are vastly stiffer than small lines and will not make a turn without taking a space of two or three diameters at the point of the bend. This stiffness makes ordinary knots entirely impracticable. The parts can not be brought together in the simpler way to get friction, so recourse is had to a peculiar form called a single carrick bend, as shown in Figure 1. When this is drawn taut it assumes the form shown in Figure 2. The turn of each part is not smaller than twice the diameter of the hawser itself. When it is necessary to tie two hawsers of a still stiffer character, a double carrick bend is used. The principle is the same as that of the single carrick bend, but there are more turns or "parts" so arranged that in spite of the larger bends, there is a great increase of friction. Figure 3 shows the bend begun. The end at the right is carried upward, dipped under itself "its own part" and brought up through the loop, as shown in Figure 4. The completed double carrick bend with the parts drawn taut is shown in Figure 5. Here it is seen that practically the bends or turns have a radius of at least three diameters.

Here the beginner should notice that when the strain comes upon the ropes, that each one draws across two or three other parts and so does not have a short "nip," subject to strain. In the single carrick bend, there are two parts over which the parts draw and in the double carrick there are

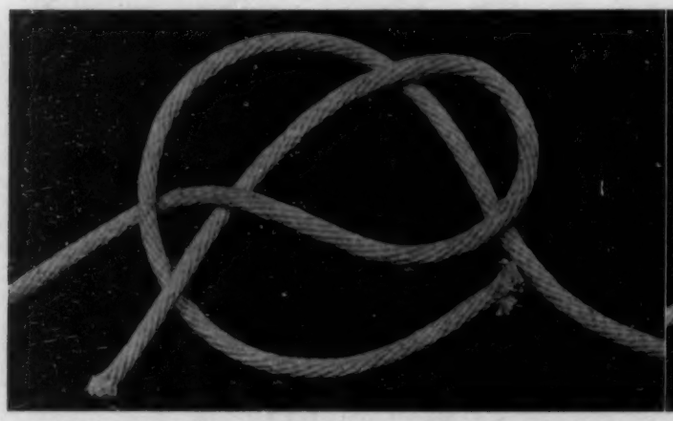


FIG. 3. DOUBLE CARRICK BEND. FOR FASTENING LARGE OR STIFF ROPES. THE FIRST STEP IN MAKING THE KNOT.

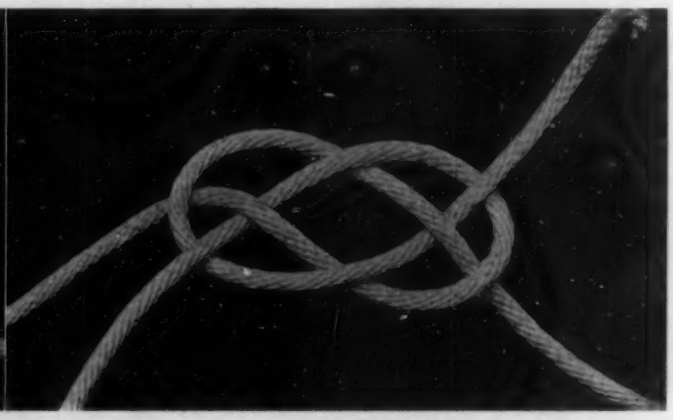


FIG. 4. DOUBLE CARRICK BEND, SECOND STEP. THE KNOT COMPLETE.

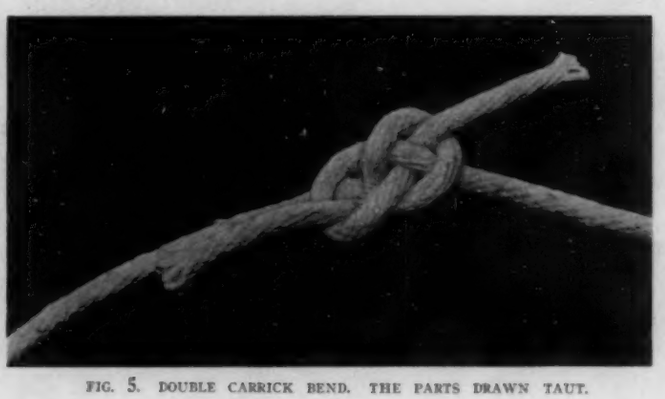


FIG. 5. DOUBLE CARRICK BEND. THE PARTS DRAWN TAUT.

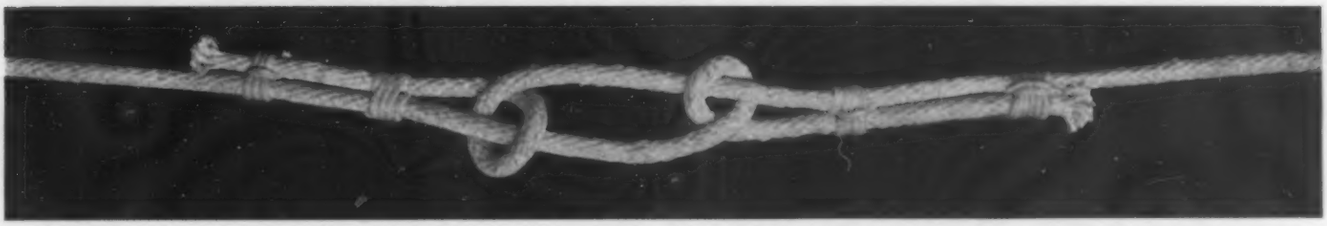


FIG. 6. REEVING LINE BEND. ANOTHER METHOD OF MAKING HAWSERS FAST TO EACH OTHER. TO MAKE THE BEND THE ENDS HAVE TO BE SEIZED.

three. Ropes always break at knots when tested to the breaking point, giving way just at the point where one part rides across another. The action is like that of a knife.

The reeving line bend is used for making two hawsers fast. It is shown in Figure 6. In order to complete it, seizings must be placed upon the ends as shown in the engraving. Fastened in this way, a hawser will go through, "render," through a chock where a knot would make it jam.

The studding sail tack bend is supposed to take its name from the use to which it was put in the days of square rigged ships. The rope is passed through a ring, or eye bolt, as is shown in Figure 8 and made fast upon itself with a clove hitch. It may be added that the derivation of nautical names and expressions is at this late day somewhat uncertain. There is little use in attempting to trace them. Some of them have come through many languages and are as old as the art of navigation itself. In coming down to us they have undergone many changes and modifications and corruptions, and at the present time probably present but faint resemblances to their original forms. Now and then a word has been traced back to something that has been out of use a hundred or more years. Sometimes a foreign word or practice gives a clue to the meaning of some seemingly senseless nautical name. Again, we find names and words that have come into use within the memory of men now living. It is also found that names vary in different parts of the world and it may happen that our studding sail tack bend in some other quarter of the globe may turn up with another and much more appropriate name.

FIG. 7. STUDDING SAIL HALLIARD BEND. WHEN MADE ABOUT A SPAR HAS THE ADVANTAGE OF LYING FLAT AGAINST THE SURFACE.

The studding sail halliard bend, which is shown in Figure 7, probably gets its name, too, from its constant use on square rigged vessels. When made with a proper proportion between the size of the rope used and the spar to which the line is bent, it lies very flat and is neat and effective.

To a landsman the timber hitch seems about as insecure as anything can be that pretends to be a hitch at all. See Figure 9. But it holds in spite of appearances, and the stronger the pull the more secure its grip.

A timber hitch and a half hitch, Figure 10, are accurately described by their names. The latter is more secure than the timber hitch and is extremely useful. It is used for handling spars or timber. By putting it near one end and the half hitch at the other, the spar or timber may be hoisted or dragged with the certainty of its always remaining end on. In towing it is equally useful. In actual practice the two parts of the hitch are usually placed as far apart as may be. They are shown close together in the engraving in order to economize space.

FIG. 8 STUDDING SAIL TACK BEND. FOR MAKING A ROPE FAST TO A BOLT, EYE HOOK OR THE LIKE.

Figure 11 shows an inside clinch. Like the other clinches, it depends for its strength upon its seizings.

The longer voyages involve many complex operations which often call for special hitches and knots. Sometimes these are made necessary by the work to be done, at other times they are more convenient means for accomplishing what might be effected by the common devices.

The man who really loves his boat and the water and to whom cruising is a joy, has usually an insatiable desire to know everything pertaining to seamanship, ship building and rigging. To such men no excuse is needed for proceeding along these lines, in other words for presenting further chapters on knots.

We are indebted to The Marine Manufacturing and Supply Co. of New York, for materials used in illustrating this article, also to The D. Van Nostrand Co., New York, publishers of nautical and scientific books, for valuable assistance.

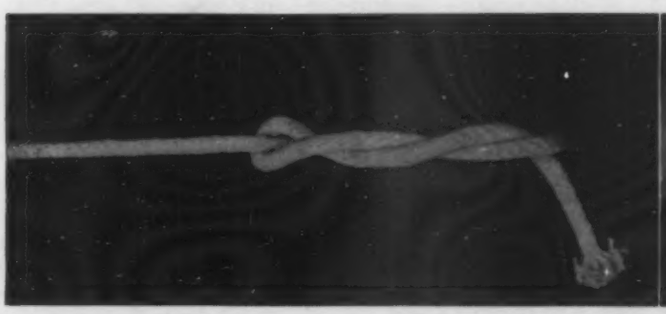
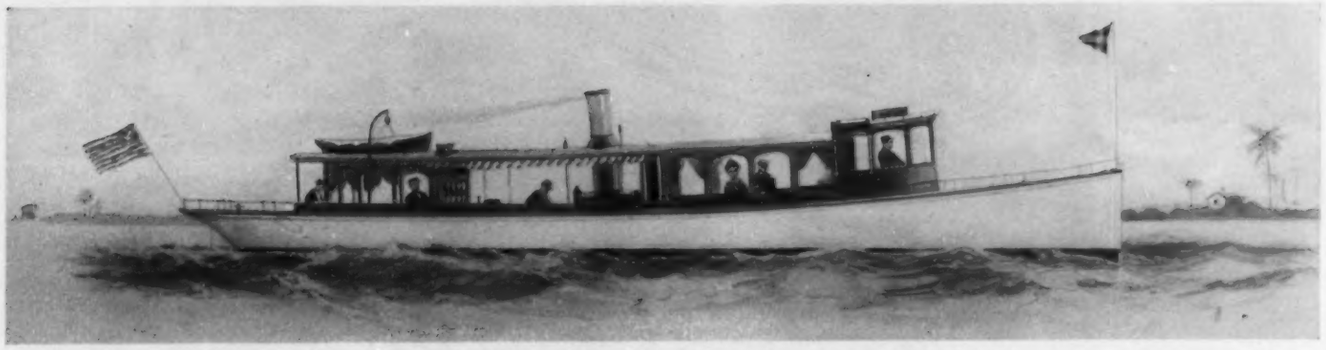


FIG. 9. TIMBER HITCH. A QUICK AND EFFECTIVE WAY OF ATTACHING A ROPE TO A SPAR.

FIG. 10. TIMBER HITCH AND A HALF HITCH. USEFUL IN HOISTING, LOWERING OR TOWING SPARS.



55-FOOT TRUNK-CABIN STEAM LAUNCH, STRAE, BUILT IN 1892. SHE HAD A 75-HORSEPOWER TRIPLE EXPANSION ENGINE AND A SAFETY WATER TUBE BOILER. HER SPEED WAS FROM 12 TO 13 MILES PER HOUR. SHE WAS BUILT FOR BOTH DAY SERVICE AND CRUISING. OBSERVE THE SIZE OF HER ENGINE AND BOILER ROOM IN PROPORTION TO HER OTHER ACCOMMODATIONS.

# The Evolution of the Power Boat

By AXEL NEILSON

Photographs by courtesy of Gas Engine & Power Co. and Charles L. Seabury & Co., Cons., and others

THE motor boat is distinctly a modern product despite the fact that it represents a development of the pleasure launch which had grown into general use in the last quarter of the preceding century. The stages, however, were so rapid as to make of it virtually a new type, appealing to a new and much larger class of users.

The pleasure launch in America had its first inception early in the seventies in various small experimental craft propelled by steam.

Even the best of the launches of that era, as perfected by the Herreshoffs and other specialists, would seem but poor and primitive when tried by modern standards; the hulls, designed as a rule with speed as the main object, were lacking in all sea-going qualities and were safe only in smooth water; the accommodation was limited, the greater part of the hull being monopolized by engine, boiler and bunkers, and the passengers were subjected to all manner of annoyances from heat, smoke, coal dust, ashes, oil and a great variety of odors. The smaller open launches afforded only limited sitting and standing room in the ends; the larger, with permanent cabins, were narrow, with cramped and uncomfortable living quarters.

A 25-FOOT CLIPPER-BOW STEAM LAUNCH. SHE WAS SUPPOSED TO TRAVEL AT THE SPEED OF 8 MILES PER HOUR WITH A 3-HORSEPOWER OIL-BURNING ENGINE.

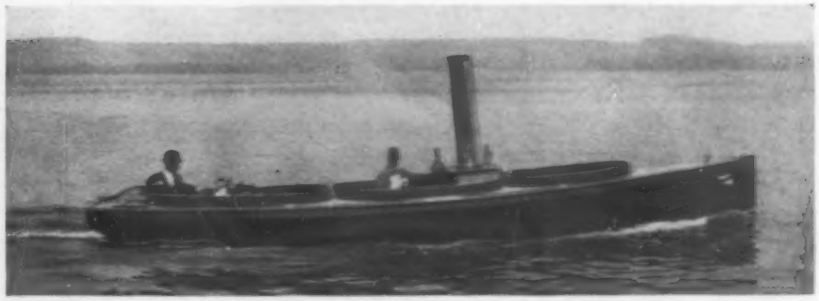
After some twenty years of experiment with steam and the coal-heated boiler there came, toward the end of the eighties, a radical change in the propelling power by the introduction of liquid fuel in several forms. Many experiments were made with the ordinary launch steam engine and various forms of boiler with kerosene as the fuel, carried in tanks and burned from a series of small jets or perforated pipes. Though launch outfits of this type were manufactured and sold for some years, no permanently satisfactory results were obtained. The next step was the use of more volatile liquids, naphtha and alcohol in particular, in place of water, within the boiler; naphtha or kerosene being at the same time used beneath the boiler for the generation of the expansive vapor. The engines themselves which thus used the "steam" of gasolene or alcohol were merely a simple type of reciprocating steam engine, devoid of special features, but very effective within certain limits. For about fifteen years, or from 1885 to 1900, the justly famous naphtha launch opened up a new field of yachting, winning many old sailor men from the allegiance of a lifetime; at the same time the utility of small power craft for many commercial uses was clearly demonstrated. Compared with steam, the naphtha engine was smaller, lighter, and much simpler, a self-contained machine of small size that could be placed in any part of the hull, the fuel being piped from tanks located in places that were of no use for other purposes. The boiler and bunkers of the steam launch were entirely eliminated, the difficulty of a fresh-water supply disappeared, and it was found possible to place the engine in the extreme after end of the hull, leaving the greater part of the boat for the passengers. An incidental advantage of no small moment in the encouragement of launching lay in the fact that the United States laws call for the employment of a licensed engineer and pilot on all "steam vessels;" but the naphtha launch was classed as exempt from the provisions of this law. An owner was thus permitted to run his boat without paid help—as only one man was required both to run the engine and steer—and to employ any intelligent yacht hand in place of two licensed officers, captain and engineer.

With all its advantages over steam, the naphtha engine was still far from perfect; it burned at a rapid rate a fuel which, though originally quite cheap, regularly increased in price from year to year. This fuel, in itself highly explosive, was burned under pressure, so that, in addition to constant flame from the funnel, there was more or less danger of a leakage of vapor from joints and worn bearings.

Though simple and easily handled, and reliable in operation, the engines were not powerful. It would be hard to overestimate the good which the naphtha engine accomplished in the popularization of power boating and the development of many types of small power craft; but still, it was hampered by certain hard and fast limitations which were never overcome.

Even before the inception of the naphtha engine, the use of

naphtha in another form had made considerable headway abroad and was known in this country. The gas engine, explosion motor, or internal combustion motor, as it is variously known—the wonderful power which has created a new agent of progress in the automobile and has usurped the place of the steam engine in many lines of mechanical work—was even then passing from the experimental to the practical stage. But for the accidental advent of the naphtha engine, it is probable that the development of the marine gas engine would have taken place a dozen years earlier, preceding instead of following the perfection of the automobile.



30-FOOT STEAM TENDER, ALOA, BUILT IN 1891 FOR W. K. VANDERBILT'S STEAM YACHT OF THAT NAME. THIS TENDER'S SPEED WAS 10 TO 12 MILES PER HOUR AND SHE REPRESENTED THE LATEST AND BEST IN CRAFT OF HER CLASS AT THE TIME OF BUILDING.

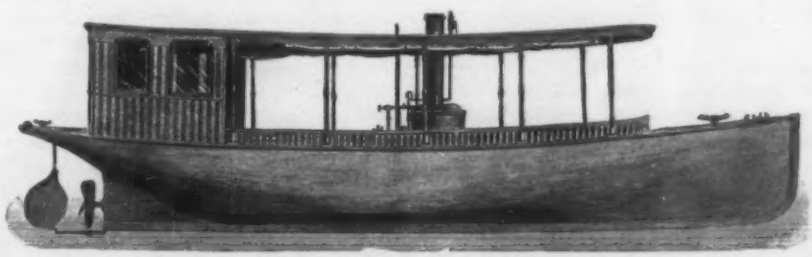
As it actually happened, the development of the gas engine to its present point, of everyday practical use throughout the world for stationary power, automobile and marine work in increasing numbers and constantly growing sizes—was largely due to the efforts of automobile engineers and inventors seeking to improve the power which, above all others, has thus far proved the best adapted to the self-propulsion of vehicles.

It is impossible at this time to forecast the future of the gas engine; so much has been done in such a marvelously short time that no one can say where the limit of improvement may lie. As it stands to-day, the gas engine as used in automobiles and launches is a small, compact and very powerful machine, self-contained and independent of heavy and bulky auxiliaries. It is free from fire, flame and smoke; its fuel may be carried to it from a distance by a small pipe, and its waste products may be carried away by another pipe, to be discharged if necessary under water. It may be started instantly without previous preparation and stopped as quickly. Its compact size and comparatively light weight permit of a wide choice of location within the hull; it may even be placed below the floor or under the deck at the extreme end. The cost of fuel is moderate, the cost of repairs is low under fair conditions, and it may be run by any intelligent man without special mechanical training. While still far from absolute perfection and subject to some annoying weaknesses, it has been greatly improved within the last half dozen years, and hardly a week passes without some new advance. The engine itself is becoming more efficient, economical and reliable, with a wider adaptability to cheaper and more abundant fuels. The immediate probabilities are that it has a long and useful future before it in the marine field, even in sizes heretofore considered as fitted for steam alone, before it in turn gives way to some more perfect agency of propulsion. After every possible allowance is made for its disadvantages, it must be recognized even now as an eminently satisfactory power for pleasure craft.

THE NAPHTHA LAUNCH AT ITS HIGHEST POINT OF DEVELOPMENT. THE 62-FOOTER, THELMA, BUILT IN 1896. THIS ILLUSTRATES THE ORIGIN OF THE RAISED BRIDGE DECK ON SMALL CRUISERS.

In the matter of speed it has been possible, by reason of the compact form of the internal explosion motor, to produce pleasure and racing craft of extremely moderate size whose speed is entirely out of all proportion to the size of craft or cost of running which would have been necessitated by a steam-driven engine. To gasolene must be given the credit of having brought within the reach of men of comparatively moderate income cruising and racing craft able to get through the water at a rate of speed which would have been considered impossible but a few short years ago.

The encouragement which has been given to the designing of fast craft by the new motive power is to no small extent responsible for the almost revolutionary development of swift types of hull. Where the end will be it is difficult to say. The disinclination to experiment with freaks will, however, lead to logical results.



A 30-FOOT STEAM LAUNCH OF 1890. SHE WAS EQUIPPED WITH A 4-HORSEPOWER ENGINE AND UTILIZED KEROSENE FOR FUEL.

"CROWLEY, THE TYPE OF BOAT WHICH WILL BE ALIVE AND FLOURISHING LONG AFTER THE TALL SQUARE-RIGGER HAS PASSED INTO VAGUE TRADITION."

# Around the Horn—The Log of a Second Mate

By T. JENKINS HAINS

THE captain and I spend most of the time in reading from a pile of magazines, and from an accumulation of ancient copies of "Puck" and "Judge."

"Co'onel Carter of Cartersville" was quite interesting to me as a type of Virginian, and after finishing it I asked the captain if he had read it.

WITH FAIR WEATHER CAME BUSY DAYS FOR OFFICERS AND CREW.

"No! I think not. Who is it by?" said he.

"F. Hopkinson Smith," said I.

"Well, I don't exactly know whether I've read anything written by him, or not; but I have read 'The Flying Scud,' by Q. McPherson Brown."

However, I assured him, that although the name of the author was similar, in some respects, "The Flying Scud" was evidently written by an entirely different person.

The captain has broached every subject for argument that he has been able to think of, in trying to confirm his opinion that we cannot agree on any, and in spite of all that I have done, he has been, thus far, successful. He seems to have a good deal of suppressed wrath, and suffers in consequence.

His greatest lament, as he curses the quarter-masters, is "Damn you! If we were only going across the western ocean, I'd see that some of you never got ashore."

At San Francisco, it seems that he is under twenty-five hundred dollars bond to keep the peace, and the laws of that city governing the irrascibility of captains' tempers are quite severe—on the captains.

During this period of good weather, Mr. Enlis, the mate, has kept all hands busy overhauling gear. The duty of running and taking care of the ship, devolves almost entirely on the mate aboard of these packets, the captain, of course, overseeing everything and giving general orders. The mate's position is a hard one. His pay is usually about fifty dol ars per month, and the on y work done on board the ship that does not come directly under his supervis'on, is that which is done whi'e he is asleep by the second officer. The captain very often, however, holds him responsible anyhow, whether the occurrence happens in his watch or not.

He and the second mate stand the watches. The captain never does, although he may stay on deck for a couple of days at a time during a storm that endangers the safety of the vessel. A careful captain, who really watches his ship, is called at least once during each watch of four hours, from 8 o'clock p.m. to 8 o'clock a.m., and the state of the weather and the ship's course reported to him. Of course, if there is a sudden change in the direction of the wind that necessitates the ship's course being changed, he is usually notified, especially if the weather be threatening.

The mate, however, keeps the dead reckoning; and so accurate does he become after long practice, that sometimes when he does not see the sun for a week, and the ship's course is changed a dozen t mes during that interval, he will work out her position by traverse table very closely. His instruments for navigation are simple enough, for they consist of but a quadrant and a nautical almanac. With chronometers he has nothing to do, as his pay is not sufficient to justify him keeping one. The ship

furnishes none, and those used are the private property of the captain, as are also the charts, barometers, thermometers, sextants and other instruments used for navigation. These, of course, he never sees, as he must not dare to enter the sacred precincts of the captain's cabin.

In spite of this, if he be a careful mate, he will seldom if ever make an error of more than ten miles of longitude in several weeks reckoning, and more often keeps pretty well along with the captain, who will never, voluntarily, give him any information, but keeps his charts, with the ship's track marked in pencil, carefully out of sight. This error of ten miles may seem large enough to a scientific navigator, but if the conditions are taken into consideration, such as the vessel being nearly always hundreds of miles from land where there is no danger of running foul of the rocks, and the man's lack of education, it will be seen such reckoning will answer all purposes and is, in fact, almost phenomenal in point of accuracy. He checks daily on latitude.

Both the captain and the mate take the sun's altitude at noon, if the weather permits, and the captain also usually takes an observation at about 8 o'clock in the morning; so about the only time during a voyage that the ship's position is not worked out daily, is when running up or down the southeast trades in the Pacific, where the weather is nearly always fine, the wind steady and the ship thousands of miles from the nearest land.

The second mate has nothing to do with the reckoning, as a rule, and his duties are simply those of an expert sailor and skilled seaman. He receives the course from the mate or captain, and he heads the ship up to it, if the weather be good, or works her the nearest way possible to it if the weather be foul, being in command of the ship during his watch on deck. He often goes aloft with the men, in cases of emergency where all hands are called, and stands on the slings of a lower yard, or on the foot-rope at the bunt of a course or top-sail, directing and hurrying the work, sometimes hauling out the earrings and tying the reef-points with the men. He has his room in the forward cabin, corresponding to the mate's although his mess is with the third mate, carpenter and steward.

The third mate is supposed to be under the direct orders of the mate, and help him in any way possible during his—the mate's—watch. On this ship, this was not so owing to the fact that the third mate was a son of one of the owners and did as he pleased.

While this good weather has lasted there has been work enough for everyone, and all the mates have been on deck during the daytime.

Every old brace fore and aft has been, or is being sent down, and new ones reeved. All of the blocks are being overhauled, and new sheaves and pins put in where needed. Wire-rope pennants for the lower top-sail yards have been rigged, to stand the strain coming in the fight to weather the stormy Cape. Our old sail-maker, "Dan," who is a personification of J. Fenimore Cooper's "Long Tom," has had two men detailed from the crew, to assist him in making some headway through the pile of rags that are to be patched up into sails, and which are being sent down from aloft and dragged up from the lazarette on to the poop, where he can get to work at them.

A ship always puts on her new cloth in bad weather, as it is least liable to carry away in the pressure of a blow, instead, as would be supposed, of wearing her oldest; and as the new courses are set, with the new top-sails and top-gallant sails over them, they make the ship look very pretty and white from the deck. Our mainsail is large as the main yard and measures ninety-six feet in length, so an idea can be had of the area of whiteness that this sail alone shows above the deck.

This is the "Sea" running down the northeast trades, with the wind, however, continually to the southward of East.

As she reaches ahead, with the yards sharp up against the backstays on the port tack, she is a beautiful object, viewed from a short distance.

The low black hull, under the towering white fabric, racing through the water at the rate of nine knots, rising and falling with a graceful steady fore-reach, like a horse at an easy gallop, as the regular trade swell slips under her forefoot and goes roaring off to leeward in a white hissing smother of sparkling foam. She is careening a little under the pressure of the canvas, the great white bellies of the foresail, mainsail and cross-jack, standing stiff as boards and pulling steadily. The top-sails, top-gallant sails, royals, are all rap full; while the weather leaches of the main and mizzen skysails are just "touching" the wind, as the watchful eye of the quartermaster, at the wheel, notes every movement, while he holds her head steadily within six points of the "trade."

Yes, she is a last representative of a noble race. The American clipper, "the queen of the sea."

We made good headway up to November the tenth, when I was aroused during the night by a call of "all hands to shorten sail." The deep roar overhead told plainly that we had been struck by a squall. Slipping into my clothes and going on deck, I found everything in an uproar. Men yelled and swore at each other in the blackness; a figure loomed up alongside of me and roared, "Who are you?" "It is I," I yelled, "who are you?" It turned out to be the captain, as just then a blinding flash lit up the inky blackness and I saw that the ship was under short canvas. As the eyes became more accustomed to the intense darkness, a heavy black bank of clouds was seen rising rapidly in the southwest, lit up every few seconds by vivid flashes of lightning. For over an hour all hands worked to get the ship in shape to meet the storm; but we got only that first squall and as the watch went below, I went also, and turned in again.

We have struck the doldrums in six degrees north latitude.

All the next day it was calm, and the sky was so overcast that it became too dark to read or write in the cabin. There was nothing to do but sit around all day and wait for a breeze. The next day, the eleventh, it rained about every half hour. Thick oily clouds would come from the east, following each other at irregular intervals, and as they reached the ship it rained furiously, accompanied sometimes by a slight puff of wind.

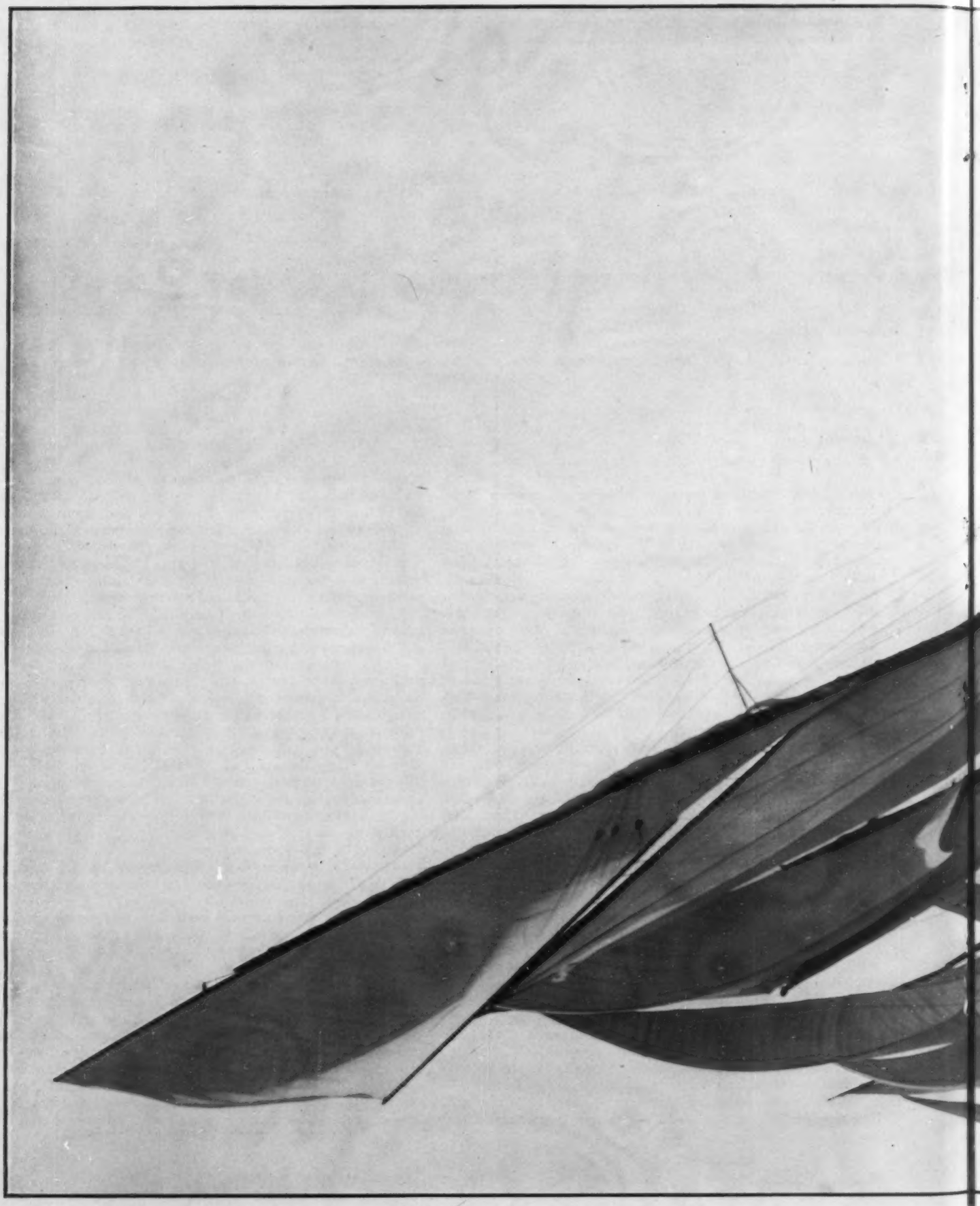
It was "Clew up royals," "Sheet home royals," all day long until everyone was worn out. The water, however, was most acceptable. Although rain water will not do to mix with that contained in the tanks, as it will become "rotten" as the sailors call it, it was caught in every imaginable kind of vessel on deck. Everyone had a bath, and although the thermometer had not risen above 75 degrees Fahr. as yet, it was very refreshing. Toward night, a squall of greater severity struck the ship and we came near losing some of the "kites," or lighter canvas.

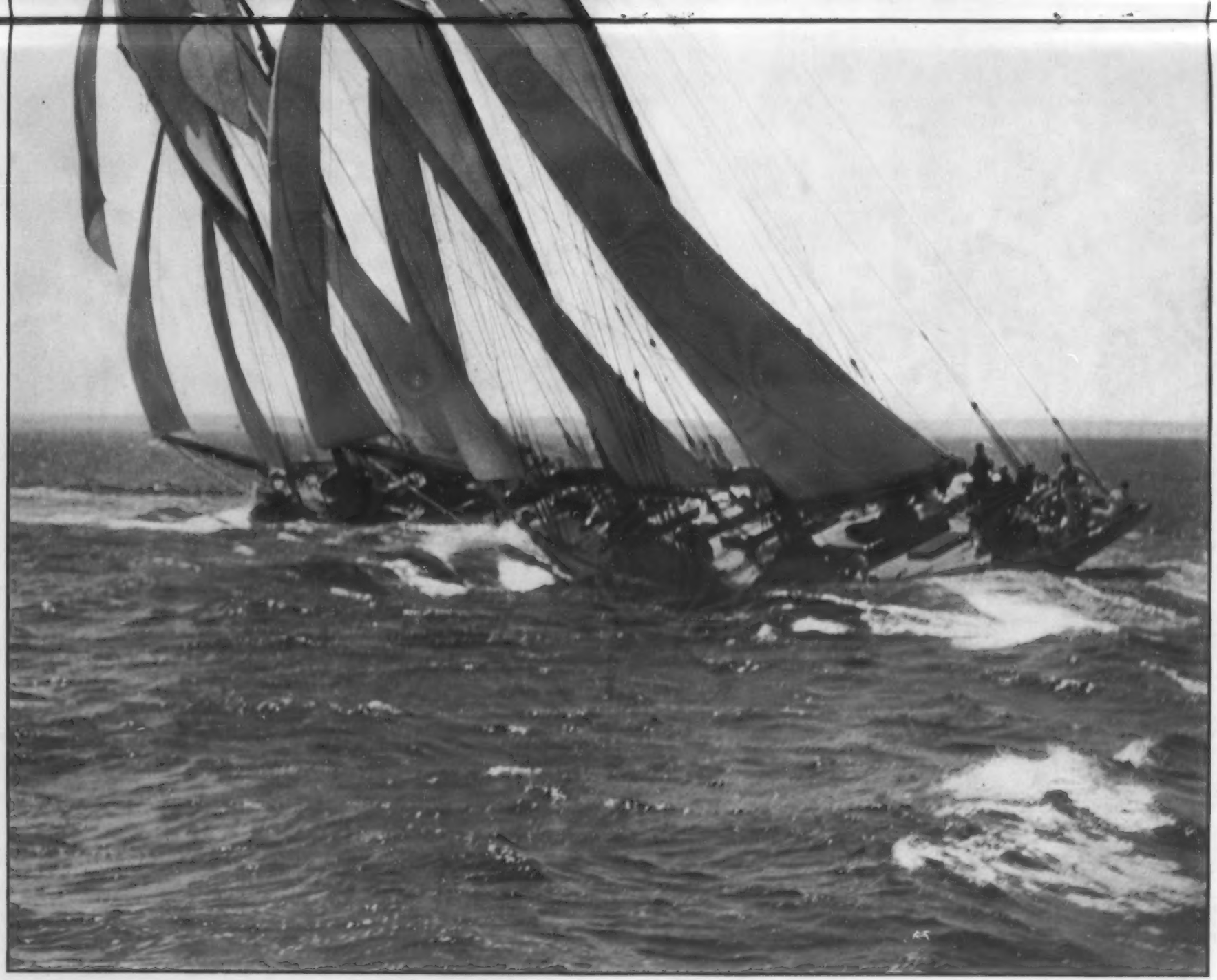
On the twelfth, we have worked down as far as three degrees north latitude, and 30 degrees west longitude. Here we are beginning to have "equator luck," for the wind has hauled and blows steadily from due South, by compass. The temperature is 74 degrees in the shade at noon, so there is no suffering from the heat.

About this time it became evident that the south wind was the beginning of the southeast trade, and as the ship could not clear Cape St. Roque, she was put about and headed to the eastward.

Then for six days, we stood back and forth on the third parallel, sometimes making a little and then being headed off again. The nights were beautiful, and cool enough to make a coat feel comfortable, while the moon lit up the ocean so brightly that one could read on deck. During these days, we frequently sighted vessels, many of which were trying to get to the southward like ourselves. I recall one, the great six-masted schooner Cowley—the type of boat which will be alive and flourishing long after the tall square rigger has passed into vague tradition.

(To be continued.)





A WINDWARD FIGHT—AMORITA AND EMERALD.

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# Where Six Cylinders Are Better Than Four

By PHILLIP J. OVERMAN

UNTIL very recent years, the finer points of gasoline engine design have not appealed nearly so much to the yachtsman as to the automobilist, for the very good reason that in yachts, taken broadly, the weight and bulk of the engine have been a much less prominent factor than in automobiles. When a cruiser of several tons displacement is propelled by a ten or fifteen horsepower engine, it makes very little difference in the speed of the craft whether the engine weighs a thousand pounds or five hundred. Even in the matter of room, one has to reduce cylinder sizes and increase piston speeds considerably, before a noticeable gain appears in the space available for other things.

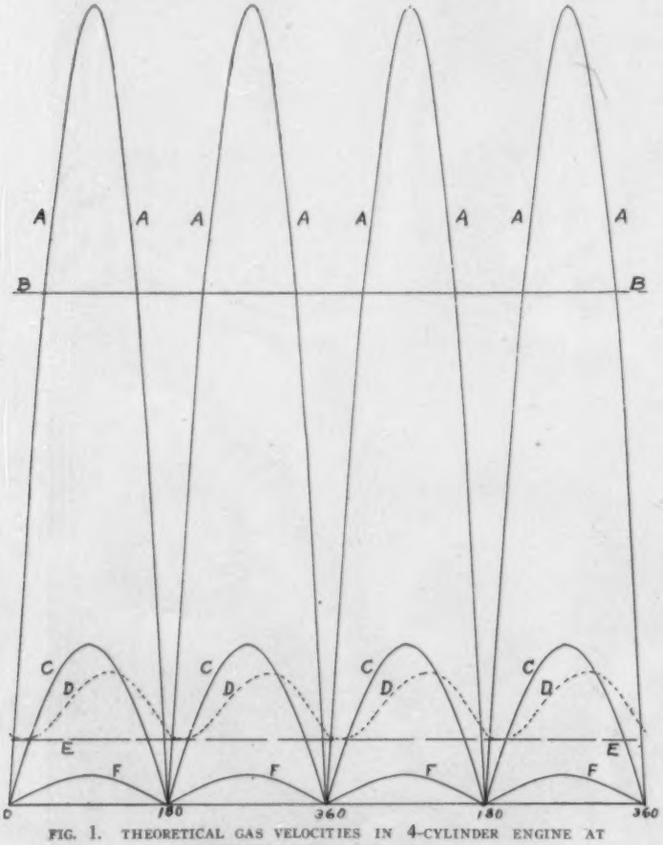



FIG. 1. THEORETICAL GAS VELOCITIES IN 4-CYLINDER ENGINE AT DIFFERENT SPEEDS AND LOADS.

Nothwithstanding all this, the influence of the automobile motor on the marine gasoline engine has been very strong and is still growing. For this the chief reason is the realization of yacht owners that the best way to reduce vibration is not to add pig iron, but to balance the moving parts against themselves. The automobile engine runs at very high piston speeds; yet its vibration is practically negligible, because its

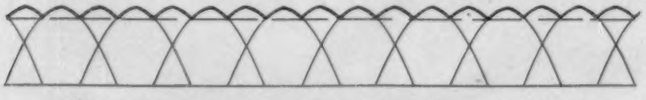


FIG. 2. THEORETICAL GAS VELOCITIES IN 6-CYLINDER ENGINE.

four pistons move in pairs in opposite directions and neutralize their own vibrative forces. This gain in speed has led also to reduction of sizes, and, aided by better materials, to a general lightening, till to-day stock types of automobile engines weigh much less than 20 lbs. per brake horsepower.

The yachtsman who has put in his cruiser or auxiliary a wooden four-cylinder engine of automobile type, and compares its insignificant size and astonishing power with the bulk and inefficiency of the towering old single and twin cylinder boneshakers, is likely to think that no further refinement can possibly be worth while. As regards his own craft, he is right. What little vibration occurs is neither unpleasant nor injurious; no other engine would take less room, or make less trouble, or burn less gasoline. If his carburetor and ignition system are good, the valves tight and correctly timed, and the piston heads clean, he is probably getting his money's full value in cruising ability and satisfaction.

But there is a yachtsman of another class whose needs are more exacting: he is the owner of the racer or semi-racer, who uses his craft for high-pressure sport on his infrequent half-holidays, or for suburban transportation to and from his place of business in summer. This man wants as much speed as is compatible with seaworthiness and ordinary comfort. He does not seek a salt shower bath twice a day, nor does he wish a hull so cranky that he must seek other transportation in moderately rough weather. Yet the hull must be as light and fine as possible, to secure speed. Therefore the engine must be low, to give stability, and fast-running, to give light weight. Because it must be light, the vibration must be neutralized with especial care.

Now, the four-cylinder vertical engine, though it runs very smoothly, is not by any means wholly devoid of vibration. Part of this is due to the fact that the turning effort applied to the crankshaft is not uniform. Each separate explosion delivers its twist, dies down to nothing, and is succeeded by the next; and the whole body of the engine reacts from these successive impulses. In a word, the engine tries to turn itself around the crankshaft in the direction opposite to that of the flywheel's rotation. It cannot do so, but each thrust must be absorbed by the timbers of the hull.

Again, even the vibration due to the reciprocating parts is not entirely abolished. This results from the slight differences in piston velocity at top and bottom of the stroke, due to the influence of the connecting rod. Slight though these differences are, they are enough to produce a rapid vertical vibration which is very marked and objectionable in a speed boat carrying a high power engine.

It has been shown mathematically and in practice that a six-cylinder engine, having cranks properly balanced and spaced, is devoid of sensible piston vibration, at whatever speed it runs. The forces due to the moving parts are exactly—instead of approximately—balanced among themselves. Moreover, the explosive impulses overlap each other, so that one begins materially before its predecessor ends. For the same cylinder sizes, each impulse is as strong as in the "four;" but the effect more nearly resembles a constant turning effort. There is no dead interval, even the briefest, in which the timbers of the hull can wholly spring back from the force imparted to them.

Comparing equal powers, rather than equal cylinders, we find that the smaller bore of the "six" carries with it, first, smaller and more frequent impulses; second, a shorter stroke; and the latter, by reducing both the total height and the flywheel diameter, makes for a centre of gravity about three inches lower for each inch taken off the stroke. Again, the lighter flywheel and the smaller dimensions throughout, fully offset the weight of the added pair of cylinders; so that for equal power the "six" is no heavier than the "four."

But there is a yet more striking characteristic of the "six," the reason for which is much less generally understood than the reason for the advantages just named. That characteristic is its "flexibility," meaning thereby the ability of the "six" to keep turning when throttled down very low. In this respect it is away ahead of the "four," which, even with a good carburetor, will "die" when throttled too closely, and will often give up altogether if the throttle is suddenly opened when it is turning very slowly. The "six," on the other hand, will pick up, almost regardless of how slowly it is running and how quickly the throttle is opened. This quality means nothing to the cruising yachtsman, who is never troubled by inability to go as slowly as he likes; but when one has a fifty horsepower motor in a light forty-foot cockleshell the case is decidedly different, and unless one has either a very flexible engine or a low speed gear, one may easily hit something when manoeuvering for a start or making a landing. And to hit something with a craft of that description has very different consequences from those to be expected with the cruiser.

The extreme flexibility and responsiveness of the "six" are popularly but inaccurately credited to its "continuous turning effort." That the continuity of turning effort, as such, has anything to do with the matter, is a notion easily dispelled when we reflect that by simply adding flywheel weight one may make the turning effort, or in other words the resistance, as smooth as he pleases. If the same power is actually developed in both cases, either type should run equally slow.

The real reason why the one engine falters and "lies down" when the other keeps steadily at work, is found in the overlapping suctions of the "six," which produce a nearly steady flow of air through the carburetor, as contrasted with the sharply varying suction of the "four." To under-

(Continued on page 308).

# Yachting in Earnest

By C. H. CLAUDY

A SMALL and curious group of water front strollers were looking at an approaching craft, which idled up the river, gradually swung in, and finally dropped her sails and made fast to a dock. Flat, broad of beam—a dirty white, weather worn—I thought I recognized her as she came. It needed only a glimpse at the solitary man who lounged at the wheel to tell the facts—and the name "Spray" on her bow wasn't necessary for identification.

And who, you ask, was the man, and what the ship? Surely you are a newcomer in the ranks of boatmen. For this Spray is *the* Spray, and the man is *the* Joshua Slocum, who alone, unaided, in a boat thirty-six feet long, sailed forty-six thousand miles around the world. The trip is ancient history. It took three years and a little more, from 1895 to 1898, and during those three years one man at least learned all that the sea could teach of its moods, its blessings and its terrors.

SPRAY—SHE SUGGESTS WHAT SHE REALLY IS, AN OCEAN HOBO WITH A PERIPATETIC RECORD OF 75,000 MILES.

"Captain," I asked, "where are you hailing from now, and where are you going?"

"Last November," he answered, "I got tired of the land, and thought I'd run down to the West Indies for the winter. So I waited until I got a good stiff nor'-easter, and then I let her run, and I have been spending the winter down where it is warm and bright."

Forgetting for the moment to whom I spoke, I uttered the thought—"You went *alone?*"

"Surely a man that has sailed around the world alone doesn't think much of a trip from Block Island down to the West Indies!" said the Captain, who looked very much alive and proud of his boat.

"But," I stammered, "how do you cook and sleep and eat?"

"Same way I did on my other voyage," he said, "tie her helm up, balance my sails against the wind and let her go. Many and many a night have I slept peacefully and quietly, while the old girl sailed herself, and sailed as true and as quiet as a ship of ten thousand tons. I left Block Island in a snoring gale of wind, and in four days' time I hadn't spilled any water out of an open bucket!"

I went on board Spray. Old and battered she looked, but that was superficial. A coat of paint, a few minor repairs were all that were needed—the boat was there, the same lines, the same stuff, the same work, that a man had made and put his faith in for a cruise the like of which is not in history.

"Is there much work for you to do on her?" I asked.

"Nothing but what you see," he answered. "I caulked her myself, fourteen years ago, and she has scraped mud and sand off the land of a hundred coasts. I never knew her to leak, and the caulking is as tight and as secure as the day I put it in. Some friends told me it would crawl, but it hasn't yet!"

"Did you have any adventures, this trip?" I asked.

The Captain chuckled. "I didn't have to scatter any tacks about the deck to keep the savages off, as I did in the Straits of Magellan, and I didn't have to bore any more holes like that one," pointing to a bullet hole in the roof of the little cabin, "which I made firing at some Terra del Fuegan who wanted to see if Nova Scotia Yankees were good eating. What happened on this last trip wasn't so much of an adventure, but it was something new for me. There isn't any end to the new things the sea is always showing you. I had seen most sides of storm and stress, hunger and cold and wreck, but I never knew thirst. I have commanded ships from Northern Lights, one of the biggest wind-jammers of her time, to this little sloop, and I have been five times around the world. I have sailed altogether over sixty thousand miles alone, and I don't know how many more miles in company, and I never had to put any one, or be put myself, on a water allowance of less than a gallon a day. But this last trip, when I was down in the Gulf, my cask got loose and went overboard. When I got it back, the bung was out and it was full of sea water. But when you are seven hundred miles from a drink of water you can do most anything, so in an hour I had a condenser made and going, and in another hour, when I had converted half a gallon of salt water into fresh, I was the happiest captain you ever saw! Want to see it?"

Without waiting for my reply he dived into the little hold and came up again with an assortment of junk that looked like anything but a condenser.

"It was this way," he said. "I took a bucket and fitted this wooden top to it. It has a hole where I could pour sea water in, and another hole, in which I fitted this little piece of pipe which was in my junk box. To this, a small piece of rubber tubing was connected, also from my junk box, and that reached to a long wooden tube, a part of an old cask pump. T'other end of that went into this hole in the five-gallon kerosene can.

"I built a roaring hot fire on a pile of chain, on deck, and put the pail on to boil. When she was steaming, I threw a lot of rags over the kerosene can and kept pouring sea water on that to keep it cool. It worked to a charm. The fire boiled the water, the steam rose into the can and I condensed it with cold water, and I had all the drink I needed!"

"Of course you stopped and went back for water," I said.

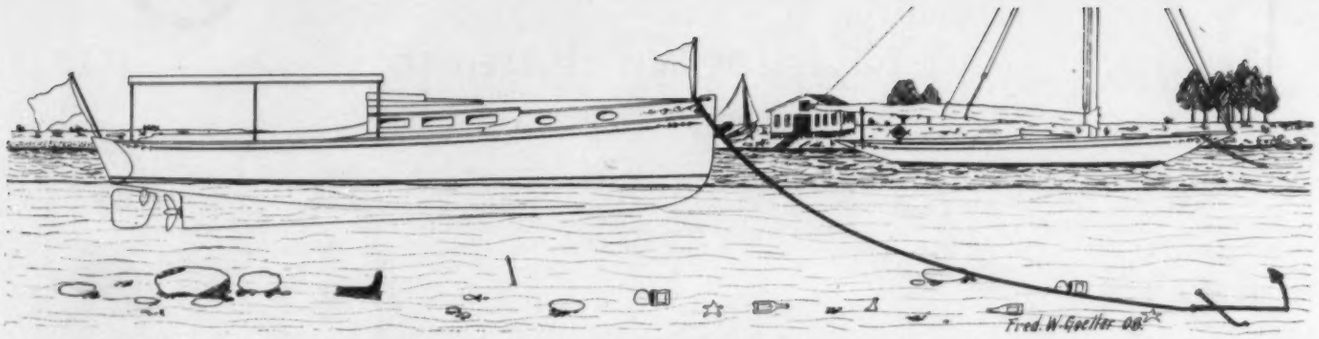
"Indeed I didn't," Captain Slocum answered; "I used that condensing apparatus for thirty-two days. I condensed every three or four days—just did that and nothing else, making enough water to drink and cook with. I didn't alter my course one point for it. But it just shows how things come in. Some friend gave me that old wooden pump tube. I had started to throw it away only a day before, but something told me to keep it. As for the junk, I could have whittled out a small tube and made another of canvas—if I hadn't had the bits I used. When you are thirsty, or think you're going to be, you can do most anything!"

Captain Slocum is a typical Yankee, from down East, although he has little of the twang of the New England States. He was born in Nova Scotia sixty-two years ago, but has sailed under American colors for years—is, in fact, a naturalized American citizen. He looks younger by twenty years than his age, and he is as spry, as able to climb aloft, stand by to come about in heavy weather, and as hale and hearty as he ever was. People, hearing of his exploits, imagine a bravado, a man foolishly daring for a little notoriety. The reality is utterly different. You see a keen-eyed man with a deeply lined, humorous face and a jolly infectious smile. You hear a pleasant voice, and you watch in vain for either the sign of bravado, or the slip in language which would betray the ignorance which might encourage foolhardiness. I asked him about his education.

"I hadn't so very much," he said, thoughtfully. "I went to school, off and on as a lad. But what education I have has come from reading and long voyages."

Then he talked of the books he had read: Shakespeare, Thackeray, Dickens, Robert Louis Stevenson, Kipling and Sir Edwin Arnold—and then brought out his scrap book, with his letters from many famous men—among them a splendid tribute from Sir Edwin himself—and a letter from President Roosevelt, whose boy Archie has sailed Spray.

CAPTAIN SLOCUM AND HIS CONDENSER CONVERTING SEA WATER INTO FRESH.




A rope, having little weight when immersed, allows craft to keep the cable fairly taut—ready to put instant strain on the anchor when she is lifted by a wave or blown astern by a heavy gust of wind.

# Anchors and Cables

By E. T. KEYSER

AN IMPORTANT part of a boat's equipment is the anchor. This is not always clearly apparent until the time comes when one's mooring is all that stands between being piled up on a lee shore and safety. The real holding portion of the anchor—that part of the instrument which does the work—is the fluke, which is so constructed as to burrow its broad spearlike point in the bottom, and burrow it more deeply and more firmly as the tension on the cable increases.

The crossbar is not used on account of its weight, and has no holding qualities. Its one mission in life is to prevent the flukes of the anchor lying parallel with the bottom and refusing to take hold.

This is why the stock or crossbar is placed at right angles to the fluke.

Kedge Anchor. The right angle at extreme of one end of stock allows it to lie parallel to the shank when stowed.

As a matter of fact, the weight of the stock is of so little importance that coasters and fishermen, whose holding ground is mostly a sandy bottom, use anchors with wooden stocks, so that, on any given weight, the greatest possible amount of that weight will be located where it will do the most good—in the flukes.

For easy stowage, the stock of the anchor is usually so constructed that, by the removal of a pin, it may be slipped through the shank, turned at right angles and be stowed parallel to and alongside of the shank.

For extreme convenience, especially in very small craft, several patterns of folding anchors are constructed. One of these, the Dirigo, is built with flukes and stock each in two parts. These parts are pivoted through the shank and held in their holding position by means of two pins, one holding the stock and the other holding the flukes open. On the removal of this pin, both stock and fluke may be laid down alongside of and parallel to the shank, and the pin will then engage in another set of holes holding them rigidly in a closed position.

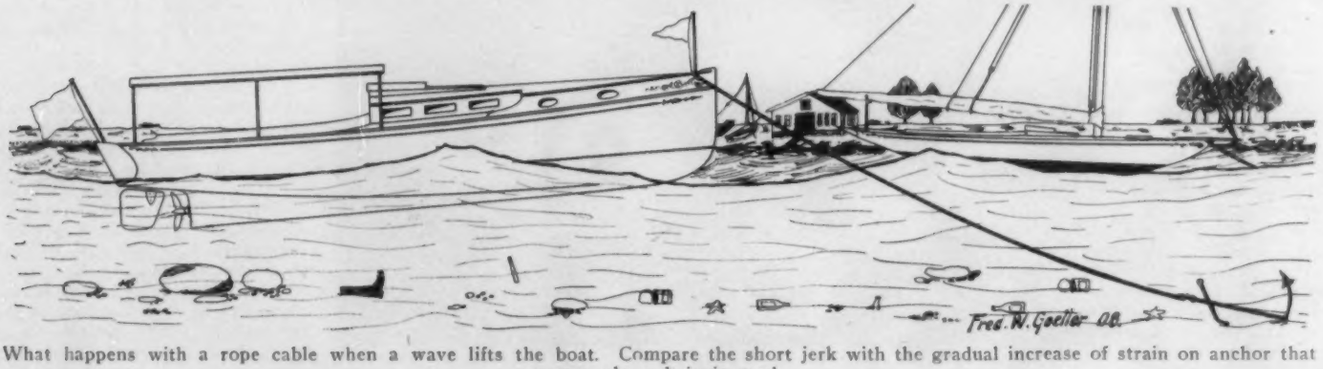
When so folded the anchor occupies very little space indeed and there is no danger of tripping over its projections. Neither will the points of the flukes or ends of the stock be driven through the planking of the boat. Another pattern of folding anchor is known as the Cape Cod. This has one end of the stock bent at right angles as in a regular anchor and it is held in place in the shank by means of a washer which may be turned to allow a rib on the stock to slide through it. It may also be so adjusted that it offers a barrier to this rib. The flukes are held either open or closed, as may be desired, by means of a sleeve sliding on the shank and held in either position by means of a groove on its inside surface engaging with studs on the shank. For small craft folding anchors such as these are a great convenience, requiring as they do but very little stowage space and being as safe as an iron rod when folded and stowed.

The proper equipment of a boat in regard to anchors depends, of course, upon her size. A launch of 20 feet or less should have a 25 lb. anchor; one of 30 feet, an anchor weighing between 32 and 40 lbs; one of 50 feet, an anchor weighing about 60 lbs., and above these sizes, the weight of the anchor should increase with the size of the boat in the proportion of one and a half added pounds for each extra foot of over all length.

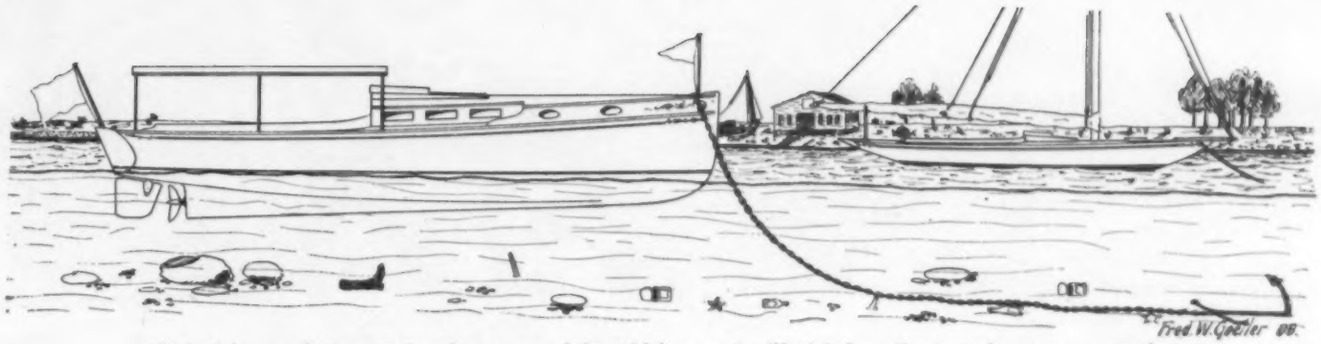
A stockless anchor used on many craft. The shape of the flukes prevents its lying on edge and the method of their pivoting causes the points to dig into the bottom by their own weight and the pull on the cable. One of the particular advantages of this form is the compact way in which it stows. It should be used with a long cable to prevent its lifting.

The skipper who wishes to take no chances and who recognizes that a few cents' worth of iron may save many dollars' worth of boat, will in addition equip his craft with a storm anchor the weight of which will, in boats of smaller sizes, say up to 30 feet, be from 20 to 25 lbs. greater than his regular anchor. And in the boats of larger size he would use anchors of from 20 to 25 per cent. greater weight. Fully as important as the anchor is the cable which connects it with the boat.

Rope cable is cheaper in the first cost and lighter; chain is pleasanter to handle. When it comes to real hard work, especially in a storm, the chain wins out every time, because, paradoxical as it may seem, there is more give and elasticity, so far as the boat is concerned, to a chain mooring than to a rope one. This is not because the chain gives, but because the weight of the chain itself tends to pull it toward the bottom to the extent of drawing the boat up as close as possible to the anchor. Then, when a sudden gust of wind strikes the craft or a wave pushes her away from her mooring, the lesser weight of the chain must be raised, as the cable



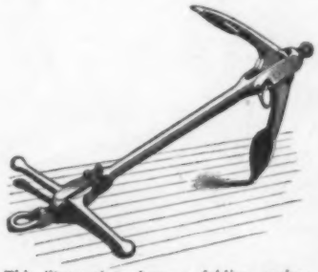

What happens with a rope cable when a wave lifts the boat. Compare the short jerk with the gradual increase of strain on anchor that occurs when chain is used.




Chain lying on bottom and acting as a weight, which must be lifted before direct strain comes on anchor.

straightens, before any pull is transmitted to the anchor itself. This elasticity is equivalent to a good sized spiral spring on the cable, and prevents a tremendous amount of strain on the anchor, which otherwise might break the hold on the bottom. With a rope cable, there being no weight to pull the craft up to the anchor, she usually rides at the extremity of a taut rope and, in this position, a gust of wind or a heavy sea jerks with a sharp tug which is instantly conveyed, along the taut line, to the anchor itself.

The styles of anchor described above, while perfectly adapted to a temporary anchorage would entirely fail to fill the bill for a permanent mooring, for the simple and sufficient reason that, lying at anchor day in and day out, subjected to tides in two directions and winds from every quarter of the heavens, all of which combinations would be bound to occur in the course of a season, a boat with an ordinary anchor as a permanent mooring would in the course of events have circled around it so many times that she would have fouled her cable on the stock and twisted the anchor itself from its hold on the bottom. This is why, for the purpose of a permanent mooring a particular form, known as the mushroom is used. The mushroom anchor is not at all artistic. It lacks that decorative effect which has made the regulation anchor more or less conventionalized a symbol and an ornament. The mushroom has an appearance very similar to the humble fungus from which it is named and its great usefulness lies in its ability to burrow down into the mud and stay there. It may also be mentioned that the average mushroom anchor frequently stays there when you want to remove it. In construction, it is simply a hemispherical shell of iron, galvanized or otherwise, through the center of which a strong shank is firmly fixed. Dropped into the mud the weight of the shank generally pulls the mushroom on its side and the sharp edges on the saucer shaped head dig down until the anchor itself is almost or totally submerged.



This illustration shows a folding anchor, in which flukes and shank are each cast in two parts which fold parallel with shank when collapsed. The pin, attached by chain, holds the parts either open or closed.

From such a position any lengthwise pull only digs it more deeply and it can only be removed by getting directly over it and yanking it up vertically and then with much effort. Of late years a modification of the regular mooring anchor has appeared. While retaining all of the mushroom characteristics, the shank has been weighted at its upper extremity so that, no matter in what position it is dropped, the anchor stands on edge and commences to dig down into a holding. This is the real reason for the weighted shank, but an additional good feature of the improvement lies in the fact that it does entirely away with the danger, sometimes experienced at low water, with the older form, of a boat pounding a hole in her planking on the upright shank.

The main difficulty, as already hinted, lies in the fact that when the average mushroom gets embedded in the mud, it is no small task to coax it up. For this reason it is wise to provide for a trip line to be attached to the edge of the head, through a hole bored through same. Such an arrangement although needed but once during a season will amply repay the small trouble involved in fitting it.

A mushroom mooring anchor with weighted shank to make it lie horizontally.

In the matter of size, it may be roughly stated that a mushroom mooring anchor for use with a power boat 25 feet over all or less, should weigh 100 lbs. and take a 7/16-inch chain; 30 feet, 150 lbs. and ½-inch chain; 35 feet, 175 lbs. and 9/16-inch chain; 40 feet, 200 lbs. and ⅝-inch chain; 45 feet, 225 lbs. and 11/16-inch chain. For craft of 50 feet or over the weight of the anchor would increase in the ratio of 5 lbs. to each additional foot of over all length.

These figures are approximately correct for power craft, without rigging to offer resistance to the wind, and whose under water bodies are comparatively innocent of keel.

With sailing craft the conditions are different, for length for length over all, the wind propelled vessel is far bulkier and more of a vessel than her power driven neighbor, her greater beam, and draught offer more resistance to the tide or current and her greater weight of ballast gives her more momentum, when she once gets started tugging at the mooring.

For these reasons, in order to leave a proper margin of safety, fully 25 per cent. should be added to the weight proper for power craft of equal over all length.

They are based upon the breaking point of first quality wrought iron chain and 12 Thread Manila Rope, when both are new.

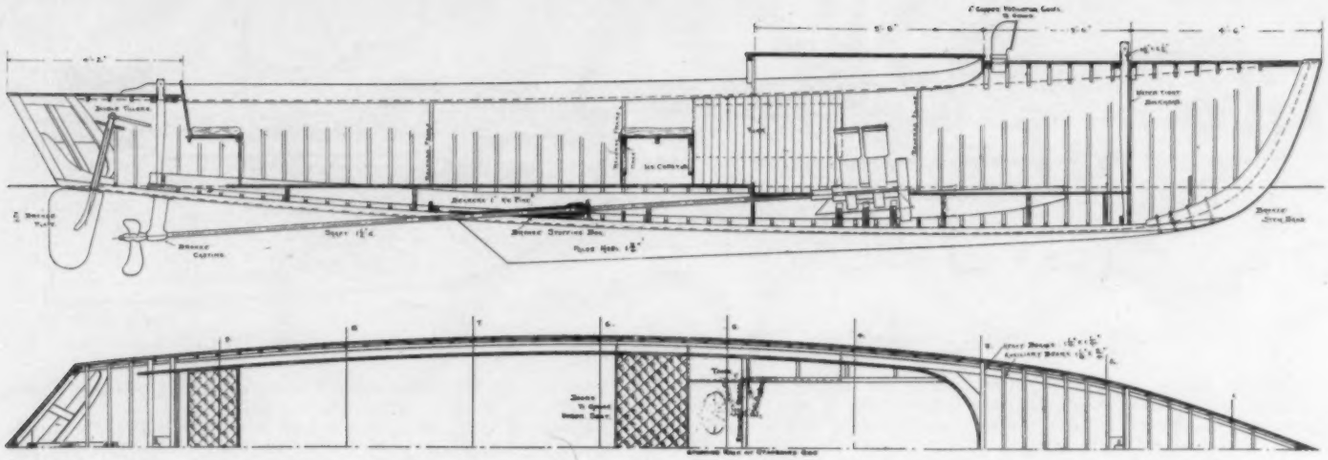
Another folding anchor. This is really a folding grapnel. The illustration shows it both open and closed. It is held in either position by means of a moveable pin which fastens the sliding locking ring in place.

With both chain and rope, one cannot be too careful in testing, after a season's use, for the weakest link in the chain is the chain strength, and a case of unsuspected dry rot, in the heart of a sound appearing rope may mean trouble and loss of the craft, when the strain comes.

In comparison of the relative strength of chain and ropes the following table of equivalents will be interesting.

| Size of Chain. | Diameter 12-Thread Manila Rope. | Break'g Strain. |
|---|---|---|
| 1/2 in., 2 1/2 lbs. to ft. | 1 1/8 in., 2 ft. 3 in. to lb. | 6 1/2 tons |
| 9/16 " 3 1/2 " " " | 1 3/8 " 1 " 7 " " " | 8 1/2 " |
| 5/8 " 4 1/10 " " " | 1 9/16 " 1 " 4 " " " | 11 " |
| 11/16 " 5 " " " | 1 5/8 " 1 " 2 " " " | 12 " |

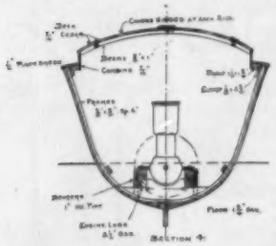
How the chain raises when the boat is lifted on a wave. The gradual lifting of this weight reduces the shock of pull on anchor.



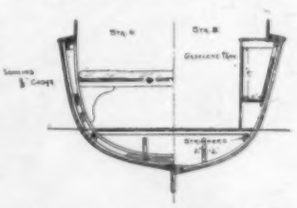
# A 31-Foot Fast Runabout

THE problem which confronted the designer, Norman L. Skene, in the runabout for Wm. J. Huntington of Concord, N. H., described herewith, was to obtain in a 31-foot launch a speed of about ten miles an hour with an eight horsepower engine.

How well this result was obtained may be judged from the illustration. The boat has 5 feet 3 inches beam. Her construction is fairly ight and fine lined, yet she has a good freeboard and is a roomy and able boat. Her motor, a two-cylinder engine, is placed forward under a folding hatch. She is controlled and steered by an automobile wheel, and control is on the port side of the after engine bulkhead. Underneath the steersman's seat is located an ice-chest. The gasolene tanks are carried amidships, one on each side. With the exception of the steersman's seat and a wide transom, with a lazy back, across the stern, the cockpit is left entirely free.

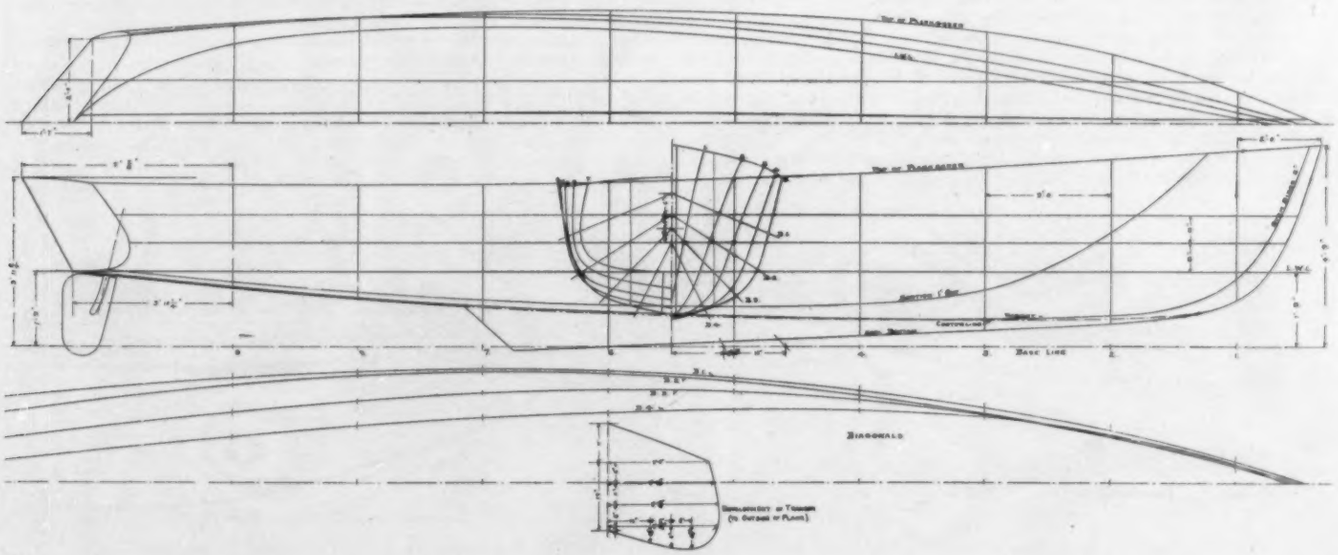


She has a slightly raking stem and a V-shaped stern. Her rudder, which comes just flush with the center line of the stern post, is of the balanced type, of three-sixteenth-inch bronze plate, and the long propeller shaft of Tobin bronze one and one-half inch in diameter is supported by a cast bronze strut just forward of the propeller wheel. The engine compartment forward is ventilated by a swiveling copper cowl and is separated by a watertight bulkhead from the forepeak locker. Her steering gear is entirely housed and out of the way, the rudder head passing through a support below the after deck and not projecting above the deck itself. She has bitts forward and aft, firmly installed.



As will be seen by the sections, the boat has a sharply round underbody forward, with straight sides, with considerable flare forward, which is carried well aft. The floor flattens as it runs aft, and that, together with the outward flare of the sides, gives a suggestion of "tumble-home" at the stern.

The construction plans show how lightness combined with staunchness has been obtained.



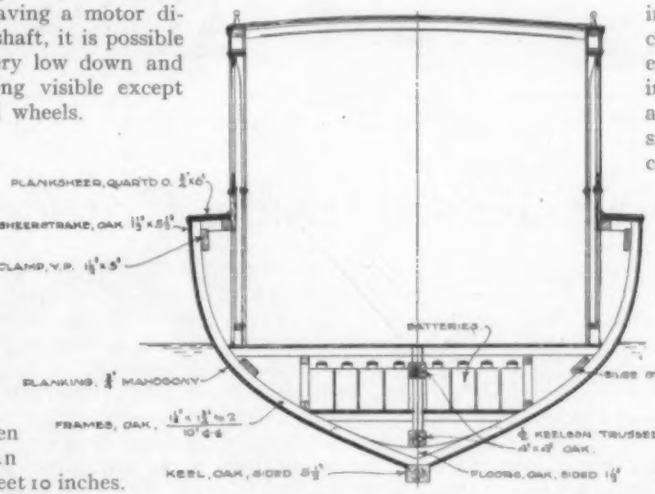
MENA, AN ELECTRIC LAUNCH WITH AN UPPER DECK AND WHOSE CABIN CONTAINS A SALOON, GALLEY AND ALL CONVENIENCES, WHICH ALLOW HER PASSENGERS TO BE INDEPENDENT OF WEATHER CONDITIONS. SHE HAS A SPEED OF 10 MILES PER HOUR AND CAN CRUISE 125 MILES ON ONE CHARGING OF HER BATTERIES.

# Mena—A 54-Foot Electric Cabin Launch

FOR many purposes the electric motor furnishes an ideal power for pleasure boats and the use of such craft has become much more general since the advent of the Mercury Arc Rectifier, by means of which storage batteries may be easily charged from an alternating current.

With electricity for power, there is no noise or odor and by having a motor directly connected to the shaft, it is possible to stow all the machinery low down and out of sight with nothing visible except the steering and control wheels.

The illustrations and plans herewith show one of the larger types of electric powered craft. The 54-foot electric launch "Mena" was built for C. E. Godfrey of New York by the Electric Launch Company of Bayonne, N. J. for use on the Shrewsbury River. She is ten feet beam and has an extreme draught of two feet 10 inches. Her speed is ten miles an hour and a cruising radius of 125 miles on a single charging of her storage batteries.

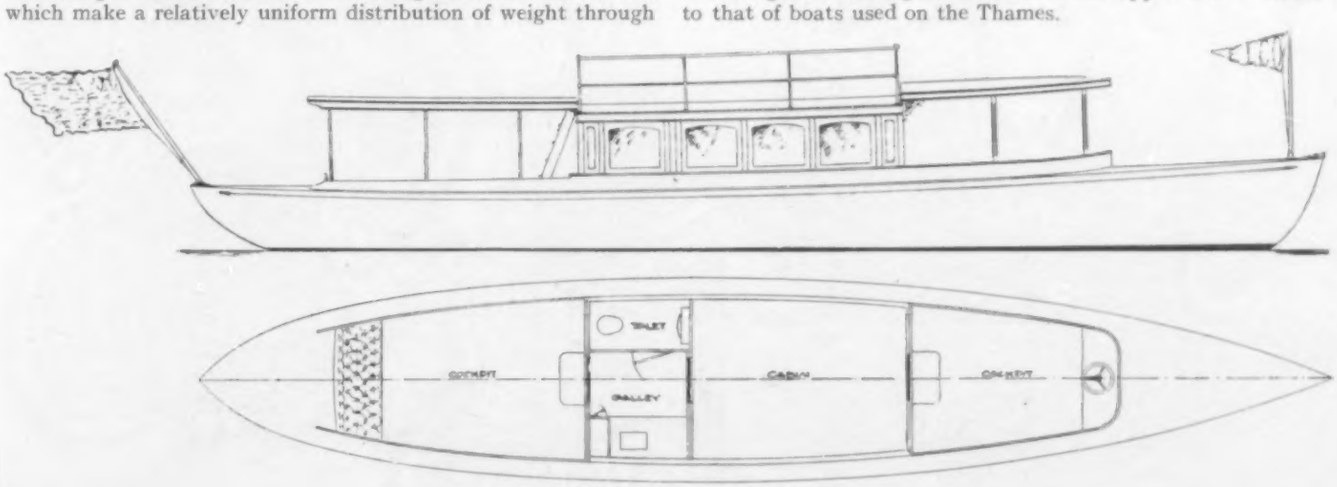



The general construction calls for special considerations in the strength of hull, because of the storage batteries and motors, which make a relatively uniform distribution of weight through three-quarters of the length of the boat. Vibration, which is a bugbear in the gasolene type, is entirely eliminated and the weights are all placed under the waterline, tending to increase the general stability.

Scantlings are heavy and a special truss girder, two feet wide, runs the entire length of the boat. This, in connection with the stringers and clamps, prevents any hogging or sagging effects in the hull. The keel is sided 5¾ inches and moulded to suit shape. Frames are tapered 2 inches to 1¾ inches and sided 1⅛ inches and spaced 12 inch centers. Stringers and clamps are of long half yellow pine. The planking is of ⅞ inch solid mahogany, finished bright, and secured to frames by copper nails riveted over burrs. Decks and finish of house are of select African mahogany, with heads of all fastenings countersunk.

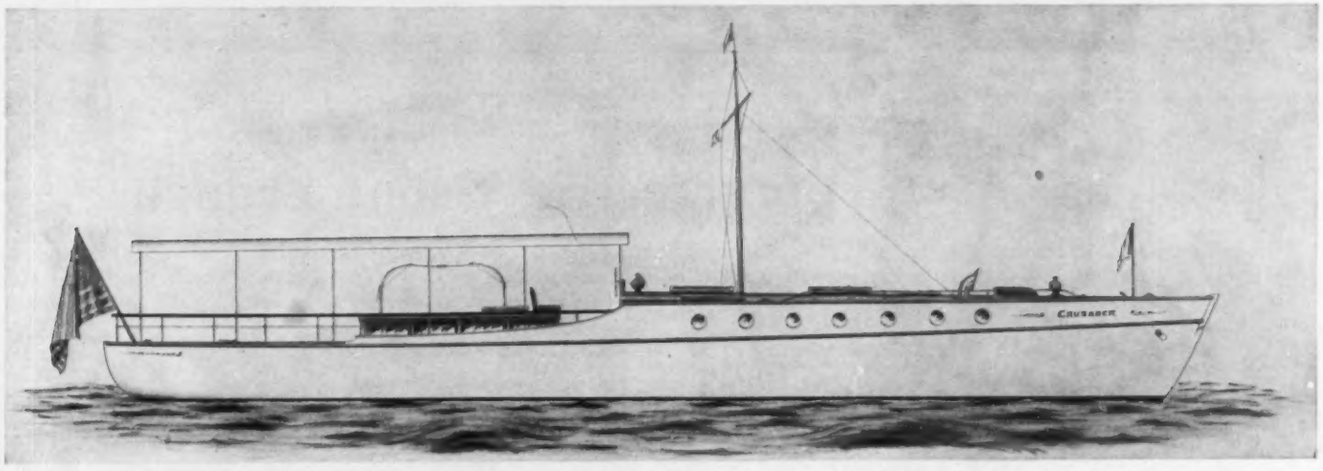
As the boat is used in day service only, the comfort of the passengers is given every consideration. The cabins are fitted with large windows with balanced sash, and good headroom is provided to secure plenty of light and air. The finish is panelled throughout with matched mahogany stock and no expense was spared to produce the best possible results in construction and finish.

The general arrangement of house and upper deck is similar to that of boats used on the Thames.



The control of the boat is in the forward cockpit and she may be managed easily by one man. Electricity is used for lighting, cooking and heating, and she carries a powerful arc searchlight.

The motive power consists of two electric motors, enclosed in water-tight cases, with a maximum of thirty horsepower and with a speed of ten miles per hour. There are five different speeds forward and two on the reverse. The charging of the batteries is a simple matter, usually done at night when the boat is not in service. About five hours are required for a complete recharge and about 125 miles are possible on one charge. The storage batteries number 176. The midship section will give an idea of their arrangement on trays under the floor.

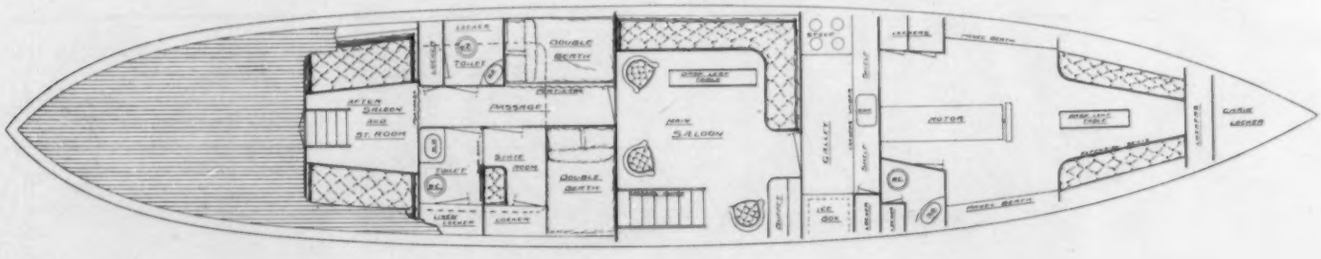



CRUSADER, A LARGE RAISED DECK CRUISER, WHICH IN AN OVER-ALL LENGTH OF 75 FEET CONTAINS, BESIDE ENGINE ROOM, GALLEY AND CREW'S QUARTERS, TWO DOUBLE STATEROOMS, AN EXTRA DOUBLE BERTH AND A GOOD-SIZED SALOON.

# A 75-Foot Raised Deck Cruiser

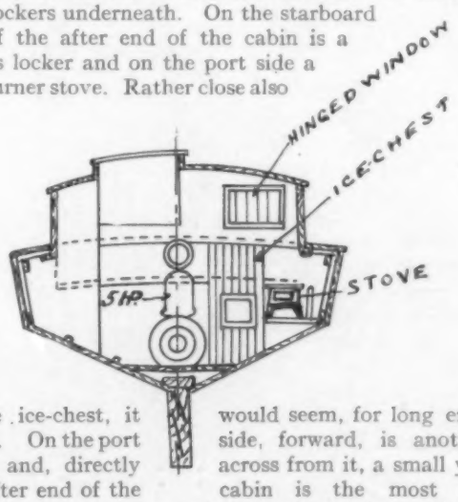
THE raised deck cruiser Crusader is a representation of a stock type, designed and built by the Matthews Boat Company, of Port Clinton, Ohio. She measures 75 feet over all, has a beam of 13 feet 9 inches and is 4 feet draft. There is a straight bow and a fair amount of overhang. The raised deck is carried aft to the midship section and is fitted with seven port lights on each side. Her midship bridge is well protected by the housing on the front, and a bulwark at the side. Just aft of the bridge is a thwartship seat on top of the raised deck house which gives light and ventilation to the after cabin accommodations. The side deck alongside of this trunk is two feet in width, providing for a comfortable passage fore and aft. The quarter deck gives unobstructed space of seventeen feet from trunk housing to stern, allowing splendid accommodations for deck chairs. The crew's quarters and power plant are situated at the bow, and she has berths and housing for a crew of four. As shown in the plans, a four-cycle six-cylinder motor of 100 horsepower is installed. When preferred, twin screws, operated by two motors whose aggregate power is the same, can be installed. With this horsepower, she will make a speed of about twelve miles per hour.

Forward of the crew's quarters is a large locker running entirely across the craft with chain lockers in the extreme bow. Aft of the forecastle and entirely separated from it by a water-tight bulkhead, is the galley extending across the width of the craft. On the starboard is the ice box with a locker, a shelf and a sink at the forward end. The galley connects by means of a door with the main saloon, which is furnished with a divan extending around two sides of the room, a drop-leaf table, three chairs and a buffet. The after end of the main saloon marks the after extremity of the raised deck and a flight of stairs from the saloon gives access to the bridge deck. On the port side of the after saloon bulkhead, a door gives entrance to a passageway in which there is a double berth shut off by portieres. On the starboard side of the passage is a large stateroom with a double berth, a locker and a fixed settee. The rear end of the passageway opens into the after saloon or stateroom fitted with extension berths on each side, used in the day time as sofas, and from the after end of this stateroom, which is lighted and ventilated by means of the raised house, a flight of four steps and a companionway lead to the after deck which is shaded by an awning, stretched on removable metal stanchions. A guard rail on each side of the forward deck protects the crew when at work in rough weather. A ventilating cowl supplies fresh air to the engine room, and both saloon and the central passageway have ventilating skylights over them.

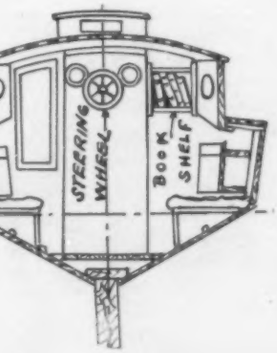


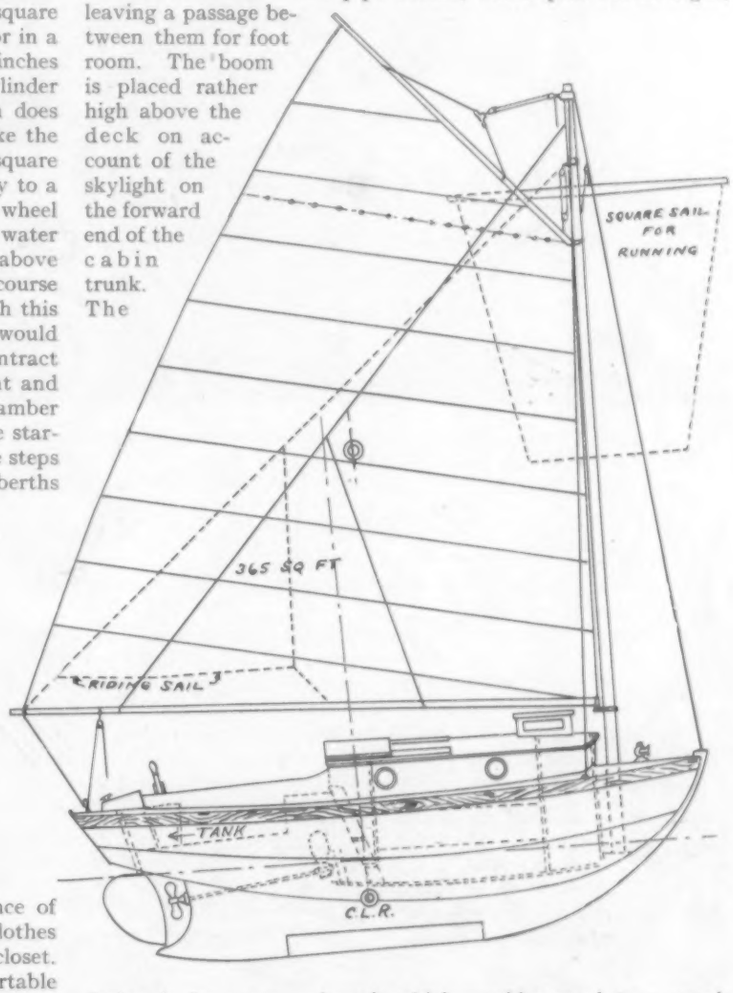
# A 19-Foot Water Line Auxiliary Cat

HERE are proposed sail and accommodation plans of C. H. Dodd's 19-foot water line cat, whose lines appeared in the April issue of YACHTING. She has a mainsail of 365 square feet in area and she is also rigged with a small square sail for running and a trysail for use when riding at anchor in a gale. As stated last month, she is a keel boat of 8 feet 6 inches beam, 3 feet 6 inches draught, she is powered with a single-cylinder 5 horsepower two-cycle engine. The cabin trunk, which does not extend to the sides, allows enough deck room to make the passage forward easy even in rough water. Her cockpit is square at the after end and fitted with a wheel connected directly to a quadrant on the rudder head. Directly underneath the wheel is the gasolene tank. The cockpit is self-bailing above the water line, and between it and the cabin trunk is a bridge rising above the deck line giving the lookout a good view of the course ahead. The ice-chest and motor are both situated beneath this bridge, a watertight hatch giving access to each. This would appear to be rather favorable to the party holding the contract to supply the ice, but the convenience of the arrangement and the opportunity which it allows for filling up the ice chamber from the outside does much to offset the expense. On the starboard side of the trunk, a sliding companion hatch and five steps lead into the cabin, on each side of which are extension berths with lockers underneath. On the starboard side of the after end of the cabin is a clothes locker and on the port side a two-burner stove. Rather close also



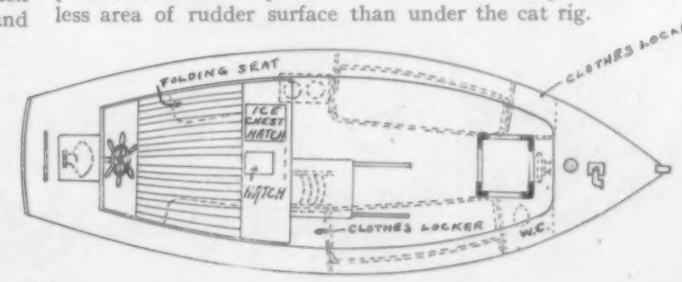

to the ice-chest, it would seem, for long endurance of the ice. On the port side, forward, is another clothes locker and, directly across from it, a small yacht closet. The after end of the cabin is the most comfortable place for cooking, the rear windows allowing heat and smell to drift astern, and as they are hinged at top may be left open, even in rainy weather. This awning ventilating arrangement is a very good feature and one which a cruiser, using his craft in all sorts of weather, will appreciate. On the forward end of the cabin trunk is a steering hatch with four square lights, giving head room in the cabin. There are two port holes in the forward end of the cabin trunk, with an auxiliary steering wheel between them. This arrangement allows the steersman, when in bad weather, to stand erect and handle the craft and keep dry at the same time. The plans call for the skipjack style of construction, which should make such a boat economical to build. The lockers for the bedding are so arranged that their front face comes directly under the rise of the side of the cabin trunk and form a comfortable back for the bunks when used as settees. These bunks are pipe berths, which pull out at night, leaving a passage between them for foot room. The boom is placed rather high above the deck on account of the skylight on the forward end of the cabin trunk. The




design is for a type of craft which would appeal to a couple of men who wanted to do most of their cruising under sail, but did not care to rely upon wind alone for propulsion.

With mast unstepped, and sailing gear removed, she could readily be transformed into a power craft, for inland cruising. Her simple rig would greatly facilitate such a transformation, but if she were to be used as a power craft only, for inland and shallow water, it would be better to reduce her draught by cutting down the area of her keel, and reducing the draught of the rudder and supporting it on a skeg. This would be entirely practical, as under power alone she would require less area of rudder surface than under the cat rig.



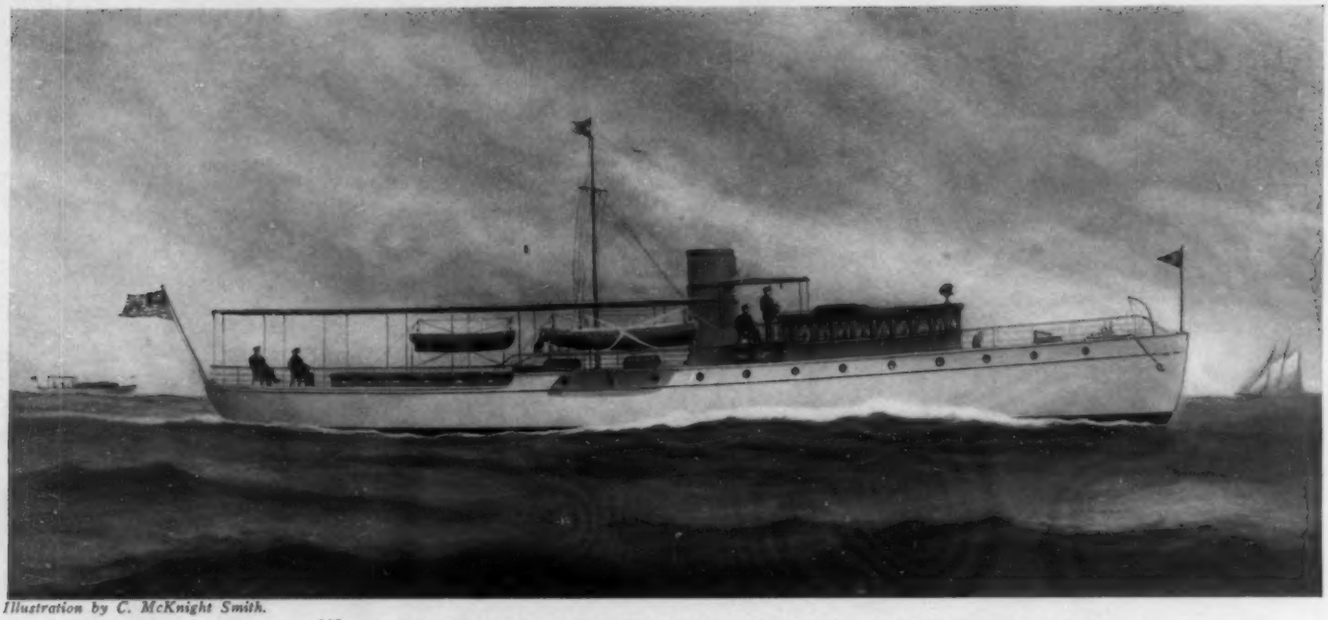


*Illustration by C. McKnight Smith.*

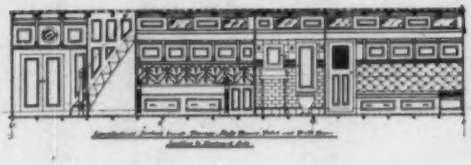
CHRISTINE, A 110-FOOT STEEL POWER CRUISING YACHT. SHE IS THE LARGEST CRAFT OF HER TYPE YET BUILT.

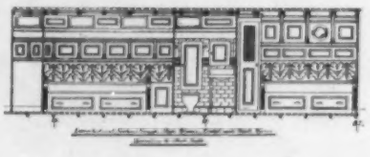
# A 110-Foot Steel Motor Yacht

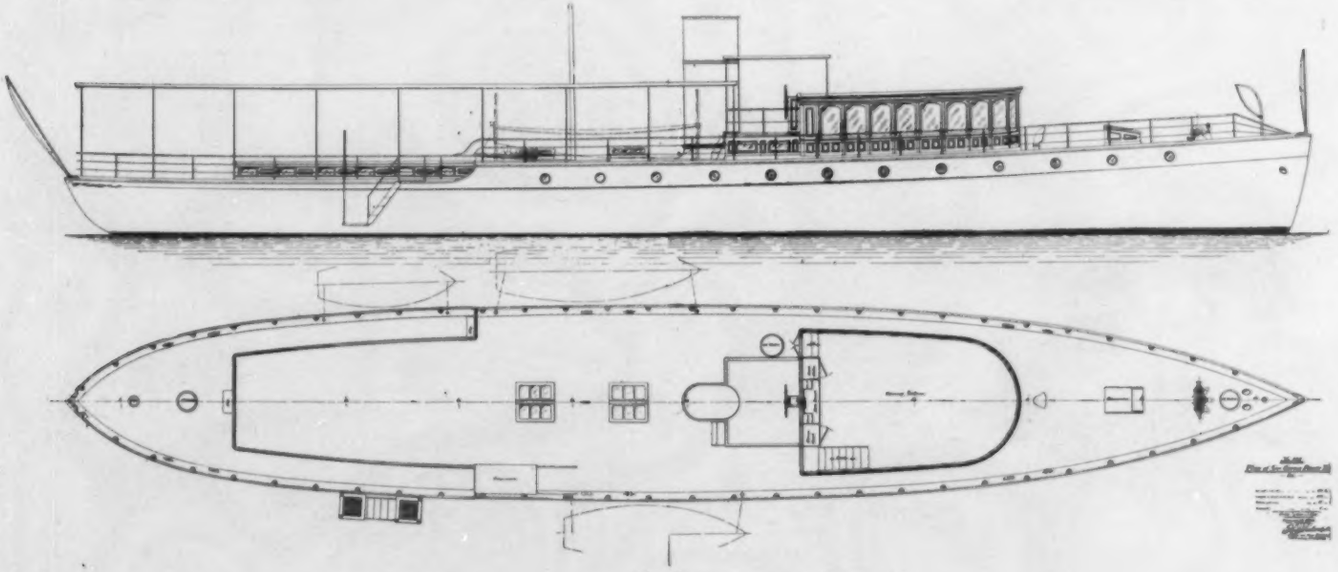
THE Lawleys of South Boston are building, from the design of Henry J. Gielow, a steel power yacht for a well known Eastern yachtsman and member of the New York Yacht Club. This vessel will be an important addition to the motor boat fleet, inasmuch as she is the largest of her type and has been designed not only for use on Long Island Sound and Eastern waters, but is intended for cruising in the West Indies during the winter.

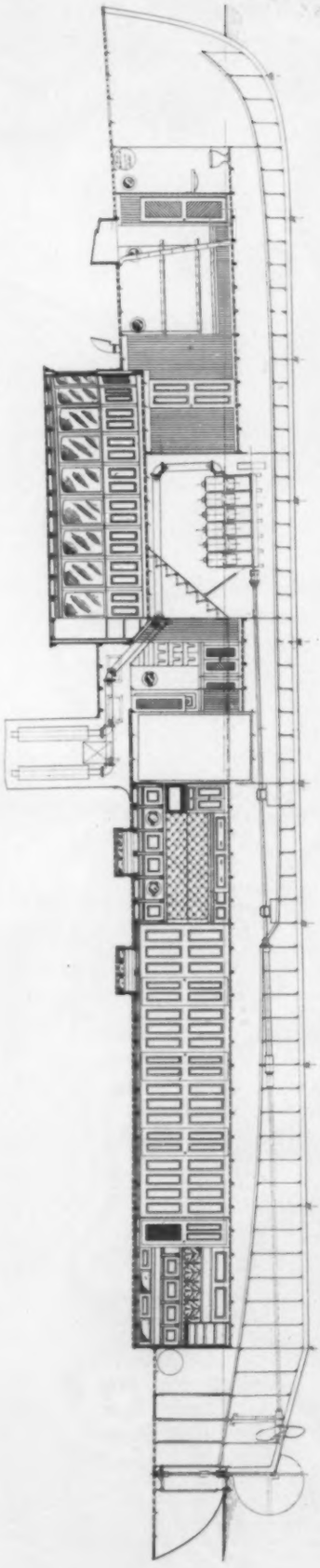
The principal dimensions of this craft are as follows:—Length overall, 110 feet; length on load water line, 103 feet 5 inches; beam, moulded, 17 feet 6 inches, and draught, 6 feet. Her lines are fair and easy, running in an unbroken sweep from stem to stern. There are no hollows anywhere. In fact, the model shows power and seagoing qualities throughout. Her sheer is graceful and artistic.

The hull of the boat will be constructed of mild steel of the very best quality, and her scantlings are a trifle heavier than Lloyds requirement. She will have no spars other than a military mast for displaying colors and signals, but will be given a stack for the more perfect ventilation of the galley and engine room. The deck is virtually flush, extending in an unbroken sweep from the stem for a distance of about seventy-two feet, where it drops two feet on each side for a









width of three feet, leaving a central trunk, which extends twenty feet further aft. This arrangement gives excellent ventilation and does away with the high and boxy appearance that is noticeable in some flush deck power boats.

Forward there is a deck-house 20 feet in length and having an average width of 12 feet on the inside. This house is depressed 16 inches below the main deck, and up to the lower sides of the windows is constructed of steel plating and finished with teak panel work on the outside and the inside. Aft of this is a steering bridge 7 feet by 8 feet, enclosed with a brass railing. The skylights and all deck fittings are of teak, finished bright, and are of a thoroughly wholesome design and substantial construction.

The deck-house will be fitted up as a dining room. There will be no stationary seats or lockers, but chairs will be used instead. Aft on the starboard side there will be a stairway leading down to the staterooms and cabin, and on the port side two steps leading to the main deck. Between the two stairways will be fitted a sideboard and buffet, all finished in teak, with drawers and lockers for cutlery. silver, etc. Doors will be fitted with leaded glass of ornamental and artistic design. A dumb waiter is also fitted leading to the galley below.

Immediately abaft the collision bulkhead is the forecastle, fourteen feet in length, fitted up with wardrobes, berths, etc., in the usual way. Staterooms for the captain and engineer, fitted with wardrobes, berths with drawers under suitable seats, washstands and plumbing complete follow aft.

Then comes the engine room, twelve feet in length, enclosed in steel watertight bulkheads with all the woodwork fireproofed and covered with asbestos, so as to reduce the danger from fire to a minimum.

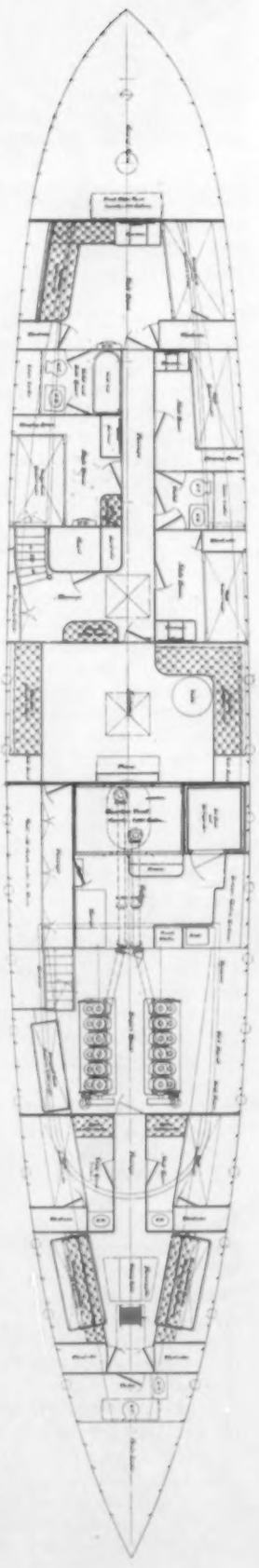
Aft the engine room is the galley, having a floor space of about seventy-five square feet, fitted with stove, dressers, sink, dish racks and closets, and on the port side aft the galley is a large icebox and refrigerator capable of holding more than one-half ton of ice, and forward in the galley is a dumbwaiter leading up to the dining room. On the starboard side of the galley is a passage connecting the dining room on deck with the saloon and state rooms below, and between this passage and the side of the yacht are large closets, bins and shelves for storing provisions.

The gasolene tank is amidship and is enclosed in a steel watertight compartment. This tank is constructed of steel, galvanized, with all rivets and seams soldered, and has a capacity of 2,100 gallons, which will give the boat a cruising radius of 1,100 miles at full speed, or 2,200 miles at ten miles an hour.

Next the gasolene tank the vessel has a steel watertight bulkhead, immediately aft of which is the saloon, eleven feet in length, extending the full width of the vessel, and fitted with divans, sideboards, bookcases and tables, finished in solid mahogany. Aft of this is the steerage, then a wide passage which leads to a double stateroom. On the starboard side of this passage is another large double stateroom and a bathroom, which connects with this and the other big rooms. On the port side of the passage are two roomy single staterooms with toilet room between.

All the staterooms are fitted with berths, wardrobes and bureaus, and nothing has been overlooked in making them as comfortable as possible. The plumbing is of the very best porcelain, with nickel plated mountings, and running water is supplied throughout the entire vessel. The bathroom and toilet-room floors will be tiled, as will also the sides and bulkheads of these compartments.

The motive power of the yacht will consist of two 6-cylinder 4-cycle motors, each developing from 100 to 120 horsepower, giving a speed of not less than fourteen and a half miles an hour, which combined with the large gasolene supply, will give an unusual extensive cruising radius. She will be equipped with three boats, an electric light plant and steam heat throughout, and all the modern conveniences.



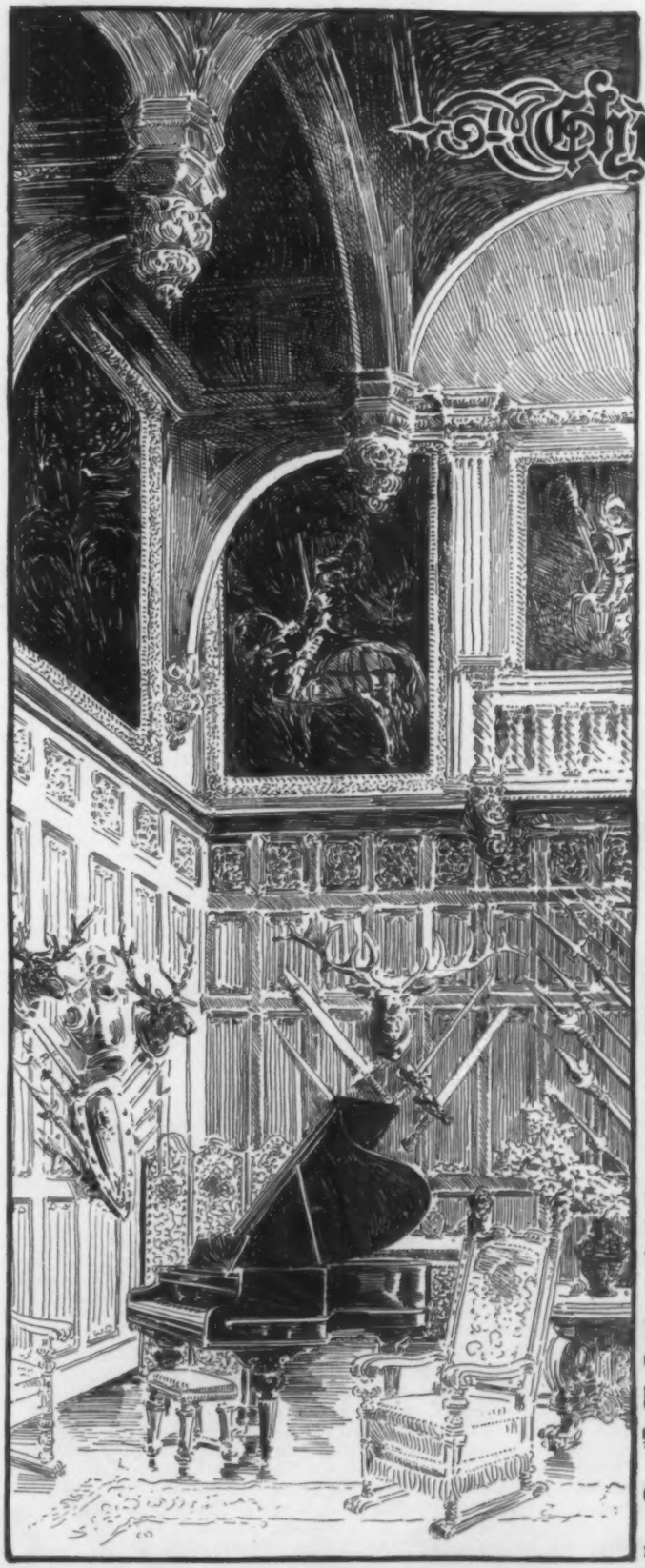
# EDITORIAL

Published by the Yachting Publishing Co.; Oswald Garrison Villard, President; Robert M. McBride, Secretary and Treasurer.

**The International Motor Boat Race.** The ardor with which American motor boatmen are rising to defend the British International Cup, won last year on Southampton Water, England, by the New Jersey flyer, Dixie, may be commended without reserve. Four candidates for the honor of meeting the foreign craft are now in course of construction, and the prospects are that several more will race in the trial events on Huntington Bay next July. English periodicals, devoted either partially or entirely to sailing and motor boating, are giving considerable attention to the plans now in progress for defending the trophy, and in one or two instances have reproduced plans of American boats now building. Of one craft our esteemed English contemporary, *The Yachtsman*, speaks complacently, calling special attention to the probable difficulty which she would experience in rough water. Well, perhaps so. But there is no reason to doubt that if the course "puckers up" on any of the race days, there will be defenders present with all the old time Yankee capacity for taking everything that comes. Of new boats, there is one building at City Island from designs by Tams, Lemoine & Crane; another at Halesite, L. I.; a third at Bridgeport from designs by Charles F. Herreshoff, and the fourth, Chip III, is now nearing completion at Ogdensburg, N. Y. All these racers involve varying constructive and propulsive ideas, all converging, however, to one point—speed. The rules of the international contest provide that each country may be represented by three vessels, and the number of boats already entered insures elimination trials which will not be the least interesting feature of the events leading up to the final contest for the cup. In truth, motor boatmen of this country will find in these contests their greatest opportunity for the general advancement of public interest in the sport of power boat racing. There are no great sailing races scheduled for this summer, and as any contest involving England and the United States is certain to attract national attention, nothing which will stimulate interest and in the end gratify patriotic pride, should be left undone by the Motor Boat Club of America. We look for great work on Huntington Bay in August and the eyes of the country will observe it.

**The Long Island Sound Racing Association** It is decidedly fitting that the withdrawal of the New Rochelle Yacht Club from the Yacht Racing Association of Long Island Sound, because of dissatisfaction in regard to the arrangement of racing dates for the coming season, be dealt with in plain terms. Because Decoration Day and the Fourth of July fall on Saturdays, there was considerable trouble in arranging a schedule that would, in accordance with precedent, allow each club of the association certain Saturdays throughout the summer for distinctive regattas. In former years there has been little or no difficulty in awarding special Saturdays to the various organizations; but with two holidays falling on the sixth day of the week, such an apportionment has obviously been impossible. The result was that at the last meeting of the association, extreme embarrassment was occasioned in assigning race days that would be satisfactory to all concerned. It was, in fact, found impossible to devise any plan to which the New Rochelle yachtsmen would agree, and the consequence has been the first break in the history of the racing association, extending over a period of thirteen years. That a resignation over such a cause should come at this time is extremely unfortunate. The Long Island Sound Association never posed as an arbitrary body; its purpose was merely to bring clubs together and, acting in an advisory capacity, have them arrange dates and other details of a yachting season in an amicable and mutual manner. In this it has served with marked usefulness. Racing has been conducted on the Sound without friction and with an impressive *esprit de corps* among the clubs which line that beautiful body of water. It is obvious that in retiring from this body the New Rochelle Yacht Club has struck a blow which may well defeat the beneficent ends of the association. We already hear talk of rival regattas, of events to be run in opposition to those of other Sound clubs, a condition strongly to be deprecated. Most of us remember the unpleasant controversy between the Seawanhaka and Atlantic Yacht Clubs two years ago, and other bitter fights are also clear in mind. Such things are best avoided. They leave a bad taste in the mouth, and, as a rule, they may be averted by the exercise of a modicum of horse sense and good nature.

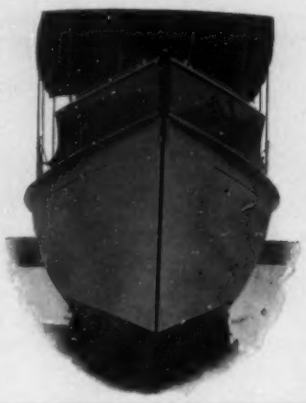
**Intersectional Races.** The spirit which prompts yachtsmen of various parts of the country to meet in intersectional contests cannot be too highly commended. The man who sails a racing craft is a bit narrow as a rule when it comes to the sport in which he is engaged. Starting with the assumption that no boat afloat is quite so good as his boat, he enlarges his glowing horizon with oft expressed convictions that his portion of the country is the only real breeding place of simon pure shellbacks, the only section in which boats worth considering are developed. When such a person takes his craft to race in distant parts or receives strangers in his own waters, he is more often than not jarred out of his complacency, and thereafter is inclined to view with wholesome respect an opponent, whether he comes from water salt or fresh, from New England or Canada or New Orleans. In special view at this time, we hold the race which has been arranged between Little Haste, of Providence, R. I., and Spray, of Chicago, which raced for the Lipton Cup last year under the name C. A. A. Basing performances upon last season, there should be little difficulty in picking the New England boat as the winner; but going back a year further, we have the remarkable list of winning performances of Spray on Lake St. Clair where she was practically regarded as unbeatable. This must give us pause, and in justice to her, be it said that when she failed to win the contest for the Lipton trophy last year, the conditions were entirely too strenuous for her. It will be a race worth seeing. We cannot have too many of them. They make for increased interest in small boat racing and in general they are conducive to the broader interests of the sport.



Chickering
Pianos

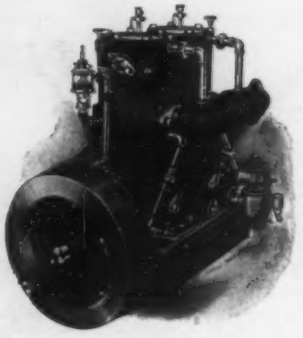
THE RESULT OF SKILL, inspired by a keen appreciation of the artistic and a desire to live up to an enviable reputation, directed by the latest scientific knowledge, and practical experience gained by eighty-five years of piano building. ¶ The resulting excellence, both as to tone, touch and general staying power, is the reason and the only reason for the uniformly high favor in which it is held in exclusive musical circles. ¶ It is conceded to be a standard of comparison for all other makes.

MADE SOLELY BY
CHICKERING & SONS
Pianoforte Makers
Established 1823 BOSTON, U. S. A.



# MOTOR BOAT SUPPLEMENT

## New Ideas in Craft, Engines and Accessories



**To Increase Cruising Radius and Cut Down Fuel Consumption.**

Many motor boat owners do not know what takes place in their carburetor. They know there is such a thing as mixture and realize that when the mixture is not good, their engine stops or slows down, hammers or splutters. But beyond that everything is vague to them. Many a good engine has been condemned when the real trouble was in the carburetor. Carburetor makers supply a number of sprayjets and the buyer is told that he should change the spray jet according to the temperature of the weather.

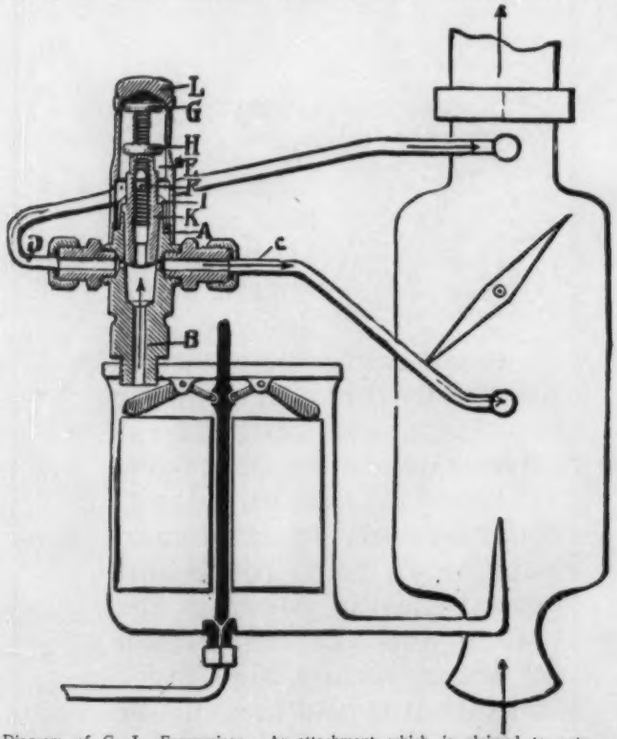



Diagram of G. L. Economizer. An attachment which is claimed to automatically govern the quantity of fuel without altering the proportions of the mixture.

On the face of this is a wrong state of things, and as long as more spray jets than one are put in the carburetor or different size nozzles are supplied with the carburetor or an adjustable needle valve is supplied, so long the carburetor itself is in a crude state. It is a common occurrence to hear the owner speak of a mixture being too weak or too rich. The cause of this is in the carburetor. It is a generally accepted theory that when an engine is running fast or pulling heavily, a richer mixture should be sent into the cylinder, while a weaker mixture is necessary when the engine is running slowly. This is a fallacy. Not a richer or a weaker mixture is needed, but a greater or less volume should be drawn up into the engine when it is accelerated or retarded. That is the ideal carburetor which hitherto has been unattainable.

The G. L. Economizer Company, however, is putting an instrument on the market by which they claim that any carburetor of the float feed system may be made perfect. In every contrivance hitherto put on the market the pressure of air on the gasolene in the float chamber equals the ordinary atmospheric pressure. This pressure is constant, not being affected in any way by the speed or load of the engine. At the same time it is this pressure which forces the gasolene into the spray jet until the gasolene there and in the float chamber are level. This is a natural phenomenon which every school boy knows. The suction at the jet, however, increases or decreases in proportion to the speed or load of the engine.

Take the pressure of air on the gasolene in the float chamber as 1, and the suction of the engine at 50 revolutions as 2. Thus the proportion of pressure of air to suction at spray jet is as 1:2. Now if we accelerate the engine so that the revolutions become 200, the suction has increased to 4x2 or 8, whereas the air pressure on the gasolene has remained constant at 1. If therefore the proportion of 1:2 is right, the proportion of 1:8 cannot be right. In this explanation lies the secret why a carburetor will choke when the throttle is closed or miss fire when the throttle is opened suddenly. So the only remedy is to vary the pressure on the gasolene in the float chamber in the same proportion or ratio as the suction in the spray jet varies, and this is what the G. L. Economizer accomplishes. Before going into details it is an easy matter to explain why the mixture goes into the suction tube. When the engine is started by the turning of the crank, the pistons are each in turn moved from the top of the cylinder to the bottom. By this movement, a partial vacuum is caused which is filled in part by mixture coming up through the suction pipe from the carburetor, consequently there is only a partial vacuum in the suction pipe. This is increased or decreased in the same proportion, exactly, as the speed or load of the engine increases or decreases. Consequently the depression in the suction tube is the one factor which is absolutely controlled by the engine itself. By making use of this depression caused by the running of the engine, the G. L. Economizer exerts its influence. It is screwed down to the cover of the float chamber and connected with the suction pipe of the engine by two small tubes, one of which goes above and one between the throttle and the spray jet. On the top of the carburetor, we have thus one inlet of air through the economizer, marked "F" on the diagram, which inlet controls the two pipes marked "C." By starting the engine, we create a depression in the suction pipe which increases as the engine gains speed, but, as the Economizer is connected to the float chamber and also by the two tubes marked "C" to the suction pipe, the depression is imparted to the float chamber by the economizer. The suction of the spray jet is also being increased in proportion to the speed of the engine so that we have now the ideal condition that both depression and suction are increased equally. The result is that the gasolene in the spray jet is held at the same level, whether the engine is running fast or slow. When engine is started, the carburetor without the economizer is flooded in many instances to provide sufficient gasolene to begin operations before suction at the spray jet is strong enough to bring the gasolene out fast enough for a mixture sufficiently rich to cause an explosion in the cylinder. With the G. L. Economizer fitted, this is not necessary as the depression keeps the gasolene from flooding, however hard the suction at the spray nozzle may be. It is therefore possible to so adjust the carburetor with an economizer that "tickling" is not necessary.

The only inlet of air to the carburetor float chamber is by means of the opening "F" on the diagram. Were this absent, the action of the engine would create a complete vacuum in the float chamber so that the gasolene would be sucked up through the tube "C," and not through the nozzle of the carburetor. It is easily understood that the closing up or opening of the opening "F" by the screw marked "G" increases the vacuum or depression and controls the height of the gasolene in the spray jet. The result of this is that the troublesome adjustment of the jet by the needle valve is done away with by the turning of a screw, easily accessible at all times. The engine works smoother with this appliance; it does not heat up to the same extent, owing to imperfect combustion, and a considerable saving of gasolene must follow.

# DON'T PAINT your boat—ENAMEL It!

WITH

THE FINEST ENAMEL IN THE WORLD

**Enamolin**

THE ONLY ENAMEL THAT WILL WEAR OUTDOORS

FOR USE ON HULLS AND CABINS

FOR USE ON BOTTOMS

New York, January 3rd, 1908

Messrs. Emil Calman & Company,

New York.

Dear Sirs:

Early last Spring I had my motor boat, "The Peggy" painted with Calman's outside "Enamolin". I had a great deal of doubt about its practicability for marine use, thinking that, from bumping into docks and piles, it might crack and chip, and I was also afraid of the action of the water (salt water) on this class of paint. I had the hull cleaned thoroughly, sandpapered the old coat of paint on it, and then applied two coats of your "Enamolin", having let the first coat set for twenty-four hours before applying the second. After the second coat the hull looked like polished marble. Then some of the old "salts" down on the Shrewsbury looked over and smiled. I found that they were smiling to think of the time I would have getting this class of paint off. It has always been customary with boat owners down on the Shrewsbury to paint their boats before launching in the Spring and to haul them out about July or August, and give them another coat of paint.

My boat was enameled and launched on April 10th, 1907. I was looking at it last Sunday, December 29th, and she looks the same as the day she was launched. Around the exhaust the enamel became black, and I was much surprised when I dipped a sponge in water, and, after a slight rub, it came off the same as soot would come off polished marble.

After watching my experiment with your "Enamolin", one of the most experience boatmen at Highlands, N.J., asked me for your address, and he sent to Pearl Street, and got your "Enamolin" for his boats. The doubt has been dissipated from the minds of the doubtful, and, I believe you will receive orders from many of the boat owners at Highlands, N.J. for your "Enamolin". You certainly will, if they desire the best outside material for boats.

You are at liberty to use this letter and I will cheerfully answer any reference as to quality, stability, etc., of your "Enamolin".

I am,

Yours very truly,

Patrick J. Kennedy
1162 2nd Ave
New York City

**Anti-Corrosive Paint.**

**Anti-Fouling Enamolin.**

**Ready for Use.**

**Easier to apply than Paint.**

*Headquarters*
*Fire Department City of New York*
*Chief of Department*

EDWARD F. CROKER, Chief of Department

*Borough of Manhattan* July 30th, 1907

Messrs. Emil Calman & Co.,
100 William Street, Manhattan.

Gentlemen:-

In answer to your inquiry, I desire to state that the Blue Label Enamolin has been used on my boats at Good Ground, L.I. and stood the test remarkably well.

The exterior of the hulls have been enamelled for over 18 months and are still in perfect condition.

The action of the weather and waters in Shinnecock Bay are very trying on all boats and as above stated your Enamolin is the only paint that I have found in a number of years which meet my requirements.

Yours very respectfully,

John D. Lerotte
Chief of Department.

Per J. S. Duvall
Sec'y & Mgr.

Enamolin wears three times as long as any paint or varnish. It dries with a finish like Porcelain, showing no brush marks. Weeds and barnacles cannot cling to its glass-like surface. Owing to its smoothness and cleanliness, it makes a *fast yacht*, FASTER. When soiled from coal dust, etc., it need not be repainted as it may be *scrubbed* without injury.

Enamolin is made in gloss white, maroon, green and black.

**U. S. Government Tests concluded 1908:**

*On steels painted with best known copper paints submerged in East River, copper paint entirely destroyed and iron corroded in six months.*

*Steels painted with Enamolin absolutely perfect, gloss fine, Enamolin not checked or cracked, and no sign of corrosion.*

**Let us send you enough to finish your Boat. Price $5 per gal., express prepaid.**

**EMIL CALMAN & CO., 100 William Street, New York.**

Address: "MARINE DEPT." ESTABLISHED 1850.

**For the Builder, Amateur or Professional**

One of the most unpleasant tasks connected with the installing of an engine is the alignment of a shaft. Even to a skilled mechanic the task is no light one, and the more a man knows about motors and craft the more he realizes that the slightest difference in the true alignment of the shaft means friction and unsatisfactory results from the engine.

Glens Falls Ball Stuffing Box, Pattern K. This device allows the propeller shaft to find its true line of angle without binding.

The problem would be less difficult if, once aligned, the shaft would stay "put." The fact is, however, that the lines of a craft change more or less after it is launched. The difference in shape between the hull of a boat shored up on land and the same hull resting on a cushion of water, is comparatively slight. But just this slight difference is sufficient to make alterations in the shaft's position.

A device which not only takes care of this, but saves time and trouble when installing, and which does away with the necessity of a shaft log, has been brought out by the Glens Falls Manufacturing Company, of Glens Falls, New York. This device allows of a variation of 20 degrees in the alignment of the shaft and does away with the task of aligning, reduces the friction on the shaft, and admits of various angles. The makers claim that it does not weaken the keel and is very easy to install. The illustration herewith is practically self-explanatory. The ball stuffing-box, which is packed as indicated to prevent leakage, has a vertical play of 20 degrees and may be locked in any position by the means of cap screws. The packing around the ball has no wear, as the ball is fixed, consequently there is positively no leakage there. The packing about the shaft is held in place by a gland which may be readily removed or adjusted when new packing is required. When worn, a new ball may be placed in housing, making practically a new stuffing-box.

Their Pattern L is a modification of this device and is adapted to take the place of the present stuffing-box attached to shaft logs either externally or internally of boat; but it contains the same features of automatically finding the true line of shaft. This company also manufactures a shaft-hanger on the same principle, which will be a great boon to the boat builder as well as boat owner.

The Glens Falls Manufacturing Company claims that their devices are inaugurating a new era in power boat building, verified by the rapid demand for them. No doubt a great future awaits these devices.

**A Strenuous Test, and How Enamolin Endured It.**

Enamolin, manufactured by Emil Calman, of New York, is claimed by the maker to be the highest grade of enamel made in this country or abroad, and is particularly adapted for use on yachts, motor boats and sailing vessels, as it will wear for years without showing any signs of deterioration.

It is manufactured in white and all colors, and has been adopted by the United States Government for use on war vessels after a comparative durability test of all the leading enamels manufactured. The test was made in the following manner: Steel plates were coated with Enamolin and other enamels and immersed in salt water. In a few weeks the gloss of all the enamels except Calman's Enamolin had disappeared and they showed signs of cracking, and in some cases had left the iron quite bare. After six months immersion in salt water, Calman's Enamolin was absolutely perfect. There was not the slightest trace of cracking nor had it scaled off in the least, but it had perfectly protected the iron. The gloss was as good as on the day the Enamolin was applied.

Tested for exposure to the weather it showed no deterioration whatever after six months. All other enamels tested had long before that lost their gloss, cracked and scaled. The Enamolin was also applied to the fire boats in New York Harbor. This was a particularly hard test, inasmuch as the fire apparatus on these boats occupied all available space, thus necessitating daily coaling. After coaling, the decks of the vessels are scrubbed and all traces of grime, etc., removed. Enamolin has been on these boats for over two years and notwithstanding the constant washing by the fire hose and other methods, there is not a crack in the surface.

It flows freely and can be brushed for an hour without showing laps or brush marks. It dries with a very brilliant gloss, and if at any time soiled by coming in contact with dirty waters, etc., it may be scrubbed without injury.

In addition, it has wonderful covering capacity and spreading qualities, and while the first cost of finishing a yacht is slightly higher, the wear will be at least three times as long.

Bottoms finished with this material remain cleaner, it is claimed, than those finished with paint. In the test made by the United States Government the steels, after being immersed for six months, were absolutely free from barnacles. Yachts finished with this Enamolin have a peculiar slip to them, and it has been positively demonstrated that craft finished with this article are considerably faster than when coated with other materials.

The manufacturers will furnish anyone who wishes to investigate, a free sample for practical test.

**As Plain as Twice Two.**

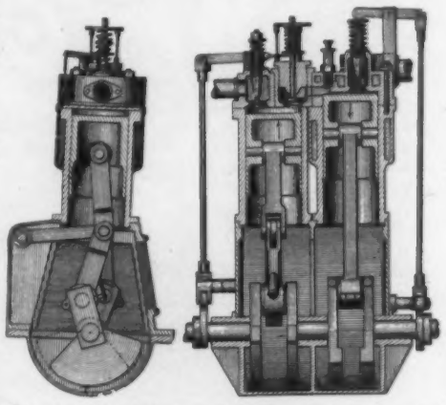
The sectional view shown herewith will give a pretty clear idea of the operation of the Twice-Two Cycle Engine manufactured by the Twice-Two Cycle Engine Company, of 20 South Canal Street, Chicago, Ill.

In the longitudinal section the left-hand cylinder is the charging cylinder. The charge is drawn in by the down stroke of the piston, the corresponding stroke of the piston in the other cylinder being the power stroke. Both pistons move down together.

The transverse section is taken through the charging cylinder, and by reference to this it will be seen that there is a radial guide attached to the connecting rod, the latter having a joint or hinge in it. The office of this arrangement is to control the movement of the charging piston, so as to make it move in the way described; thus, though the pistons come down together, they do not go up together. On the contrary, the piston of the firing cylinder—the right-hand one—leads the piston of the charging cylinder by a considerable amount, the purpose of this being to have the exhaust completed, and the exhaust valve—which will be seen in the head of the firing cylinder—closed, before the piston of the charging cylinder has compressed the charge to any great degree.

When the piston of the firing cylinder is at the top of its instroke, with a clearance of only about a sixteenth of an inch from the head of the cylinder, the valve controlling the passage between the two cylinders is mechanically opened. Then the charging piston moves up rapidly, and completes the compression. The pistons now are in the position shown in both sectional views. This is the igniting point when the engine is running at its normal speed. During the period of combustion the piston of the charging cylinder moves up at exactly the same speed as the piston of the firing cylinder moves down, thus maintaining the charge at a perfectly constant volume. Combustion, therefore, takes place during a period of perfectly constant volume, the same result being produced with the two pistons of the Twice-Two engine as is now produced with one piston in both the two and four-cycle engines by advancing the spark ahead of dead center.

At the end of the constant volume period described above, combustion of the whole charge is completed, and the highest pressures resulting from this complete combustion are, therefore, established when the piston of the charging cylinder has reached the end of its instroke—the valve between the two cylinders closing mechanically at this point—and when the piston of the firing cylinder has moved down somewhat on its outstroke, thus, also, at the moment of highest pressure the crank connected to the power piston is at a considerable angle with the axis of the cylinder, and consequently is in a position to exert a greater turning effort than in the old type of engines, where the highest pressures occur when the crank, at the most, is at an angle of not more than about 15 degrees. This angle in the Twice-Two is, of course, the same as the angle between the two cranks, this angle being governed by the amount of compression that it is desired to give to the charge previous to combustion. In the engines that the Company are now building, as gasolene is the fuel, the compression is not more than between 80 and 90 pounds, and the angle between the cranks is just about 36 degrees. It will be seen that compression, even with gasolene, could be safely carried much higher, as, unlike all two or four-cycle engines, in the Twice-Two the charge is drawn into a completely scavenged and comparatively cool cylinder. Therefore, the charge previous to compression remains at about the same temperature as it leaves the carburetor, and consequently will stand a much higher compression than the heated charge of the two or four-cycle engines, without any danger of pre-ignition.



Side and end elevations of Twice-Two Cycle Engine, the operation of which is explained in the accompanying article.

One thing that seems to puzzle most students of this new engine, at a first glance, is why the

# HIGGINS & SEITER

Largest Dealers in America in Fine China and Cut Glass

**Specialists in Supplying Table Services for Yachts**

YACHT colors or signals, monograms or crests—these appearing on the yacht's table service make it both individual and delightfully suggestive of the nautical environment.

We have for years given special attention to furnishing yachts with china, glass and silver services and hundreds of representative boats have been supplied.

Without cost, we will demonstrate our facilities for this work by executing a sample plate and tumbler for any yacht owner intending to purchase table service.

Prices attractive and quoted upon request.

51-55 WEST TWENTY-FIRST STREET,
50-58 WEST TWENTY-SECOND STREET, **NEW YORK CITY**

**$1.50 each**

**NO CLEANING**

**And we mean it too!**

**The reason is this:**

A small platinum wire is baked into the porcelain and cut off flush with the surface. The exposed area of this small wire is determined by well-known electrical laws and is so limited that it is a physical impossibility to get sufficient short-circuiting matter in contact with it to carry the current without being heated to incandescence and instantly destroyed, insuring

**PERFECT IGNITION**

under all conditions. At your dealers or post-paid on receipt of price.

**JEFFRY-DEWITT CO.**
221 HIGH ST. NEWARK, N. J.

**Try the Plug you are using in water. If it sparks it's Infallible**

## Power When You Want It

and sufficient power is assured at all times if your boat is equipped with Edison Primary Batteries and an Edison Sparking Outfit. Edison Batteries never leave you in the lurch or give you trouble. They are simple to set up, cheap to maintain and will run a whole season or longer without renewal or attention.

Your boat builder will give you Edison Batteries if you so specify. Write for and read our booklet, "Battery Sparks."

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# BUILD YOUR OWN BOAT

## by the BROOKS SYSTEM and save 3-4

**MY GUARANTEE**

I absolutely guarantee you will be satisfied. I will instantly refund your money if you are not. I stand back of every statement in this advertisement. I have made them as strong and convincing as I know how. The goods warrant it

C. C. BROOKS

I will sell you a boat for one-fourth of what a factory would charge, 100 cents' worth of actual value and results for 25 cents. Is it worth considering? Send for my catalogue, it proves what I claim. Give me a chance—right now, to-day.

Read my guarantee—it means you take no risk. I have revolutionized the boat-building business. Seven years ago I originated the pattern system of boat-building. I have built and sailed boats for 22 years.

Over 50,000 boats (more than the combined output of all boat factories) have been built from my system, mostly by inexperienced men and boys. Over half of these have built several boats—a large number have established themselves in the boat-building business.

### Boat Patterns

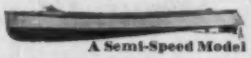
Anyone can build a boat by using my exact size printed paper patterns and illustrated instruction sheets. In these sheets I tell you how to do every little detail. My boat catalogue shows all kinds of boats, tells why the patterns cannot fail to be right, and why anyone can build a boat from them. The prices of patterns are $1.50 and up.

### Knock-Down Boat Frames

Many people prefer to buy my knock-down frames (all ready to put together) for their boats, instead of working up the rough lumber.

A Set-up Frame

A Popular Launch



A Semi-Speed Model

Owing to my immense factory facilities I can, in many cases, supply knock-down frames at a lower price than you would pay for suitable raw material. All parts of my knock-down frames are accurately shaped and machined ready to put together.

I also send free with each frame the patterns and complete illustrated instructions needed to finish the boat. **I can save you (1) boat-builder's profit, (2) labor expense, (3) big selling expense, (4) seven-eighths the freight.** You can figure this out yourself.

If engine is desired I make a special combination price with knock-down frame.

### SPECIAL BARGAIN OFFER

**Two raking transom stern launches, same model but differing in size. The greatest value ever offered for the money.**

Length 22 ft. Beam 56½ in. Speed with 6 h. p., 11 miles per hour.

**Prices K. D.**—Patterns **$5.00**. Knock-down frame (patterns included free) **$24.00**. Bent Coaming **$3.50**. Planking (either regular or hollow and round strips) **$18.00**. The nails, screws, bolts, etc. (galvanized) **$2.75**. The brass deck fittings, auto steering wheel, fuel tank and connections, rudder and connections and shaft support **$15.80**. All the foregoing **$64.05**. Will include our $95.00 Type D motor outfit for **$146.00**.

**Prices complete**—Finished hull complete and ready for engine **$145.00**. The same with our 6 h.p. Type D motor installed, ready to run **$230.00**. See Special Engine Offer.

Length 18½ ft. Beam 4 ft. Speed with 3 h. p., 7½ miles per hour.

**Prices K. D.**—Patterns **$3.00**. Knock-down frame (patterns included free) **$12.00**. Bent Coaming **$2.50**. Planking (either regular or hollow and round strips) **$10.00**. The nails, screws, bolts, etc. (galvanized) **$1.85**. The brass deck fittings, fuel tank and connections, rudder and connections, and shaft support **$8.00**. All the foregoing **$34.35**. Will include our 3 H. P. Type E motor outfit for **$90.50**.

**Prices complete**—Finished hull complete and ready for engine **$75.00**. The same with our 3 h. p. Type E motor installed ready to run **$125.00**. See Special Engine Offer.

### SPECIAL ENGINE OFFER

Type "E" 3 H. P.

Here is an engine I **know** is all right. "The Brooks Special" has copper water jacket, complete marine and electrical equipment, ready to install—3 h.p. Weighs 53 lbs. Will supply this engine together with special $12.00 launch frame (No. 233, see illustration) for **$70.00**.

The price of our regular Type D, 6 h. p. single cylinder engine with complete marine and electrical equipment, ready to install is **$95.00**. Combination price of this engine and the $24.00 (No. 234) frame **$108.00**. Send for my engine catalogue—it's free. Save money by getting our special low combination prices on all sizes of engines and frames when purchased together.

**Write me personally for my boat or engine catalogue. Sent free**

**C. C. BROOKS, Pres't** **BROOKS BOAT MFG. CO.** **2705 SHIP STREET,**

(Originators of the Pattern System of Boat-Building) **SAGINAW, MICH., U. S. A.**


charge does not fire in the charging cylinder, as the valve between the two cylinders is open at the time of ignition. Experience has shown that there is never any combustion in the charging cylinder, unless the operator advances the spark before the engine has reached its normal speed. The explanation of this condition is very simple. It means that the combustible mixture—the compressed charge—is moving through the port between the two cylinders at a higher speed than the rate of propagation of the flame. In other words, before the flame, which starts at the sparking point (the position of the plug is shown in the drawings) has time to reach beyond the valve opening from the charging cylinder, the charge has already passed that point. The best conditions are obtained when these two actions are exactly simultaneous, so that the piston of the charging cylinder just reaches the end of its stroke, and the valve closes at the same instant that the flame completes combustion. The adjustment is easily made by any intelligent operator, as the pounding of the engine immediately warns him that he has advanced the spark too far, and it is easy to detect the exact point at which the engine runs smoothest. This is, of course, the best point to set the spark.

**Gasolene Tanks** Launch owners are gradually coming to realize the importance of a properly constructed gasolene tank.

Although housed in an out-of-the-way place and not considered as one of those parts of the equipment which must be on dress parade, the tank is, nevertheless, a most important part of the boat's outfit. Too much care cannot be given to its construction and it is this care that makes the difference between the cost of a good and inferior article. Also, it is what makes the difference between a tank that is reliable and safe and one that is apt to become the reverse in stress of service.

A good tank costs more than a poor one; that is, it costs more money when you buy it, but the fact that they give no trouble makes them far cheaper in the end.

A galvanized gasolene tank should be made of the very best material throughout and in every detail of manufacture the utmost care must be exercised. Before being galvanized it must be carefully cleaned inside and out and every part of the surface must be examined.

After galvanizing the inside, the tank should once more be examined and great care exercised that the entire surface has been coated perfectly and evenly. After this has been properly done, the bottom is put into the tank.

Entire freedom from dross, flux, scale or dirt of any kind must be obtained, for such extraneous matter, if left in the tanks, will soon work its way into the feed pipe and possibly get into the needle valve, and then there is bound to be trouble.

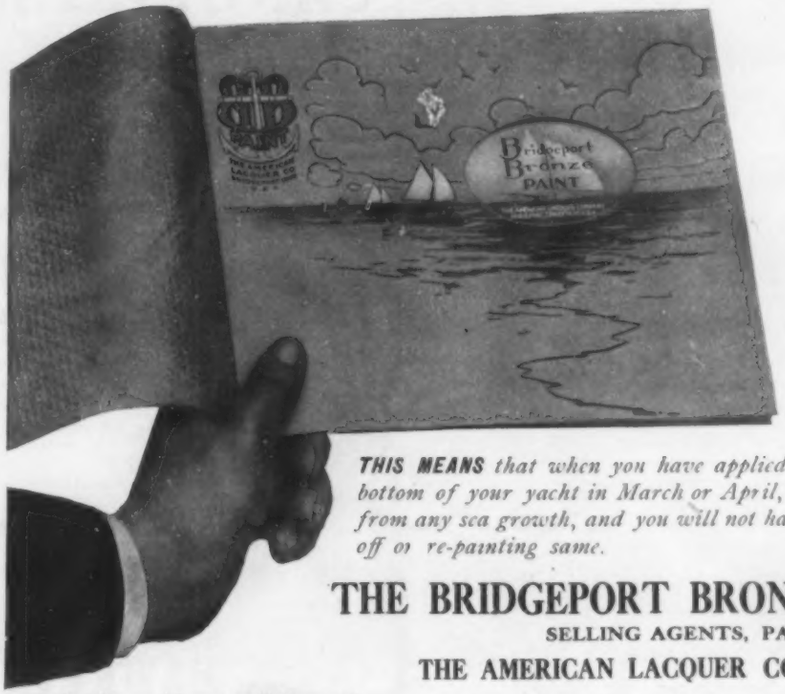
It is all this work and care that makes it reliable and costs money, but, as will be seen, it is money well expended.

We will shortly illustrate a Koven galvanized tank, manufactured by L. O. Koven & Brother of New York City.

These tanks are thoroughly well made and every step in their manufacture is inspected before they are put on the market.

**A New Firm with Old Connections.** The old yacht brokerage and marine insurance concern of Macconnell and Cook, Incorporated, was recently dissolved, but Messrs. Collender and Kiggins, who for the past three years had been connected with it, have launched out under their own names and will continue the business.

# BRIDGEPORT BRONZE PAINT




**OUR FAMOUS STAMP**

"We guarantee to refund the amount of this bill if at the end of the season there is any sea growth on the bottom of the boat, on which two coats of our B. B. Paint have been properly applied."

**The American Lacquer Co.**

***THIS MEANS*** *that when you have applied our Bridgeport Bronze Paint thoroughly on the bottom of your yacht in March or April, that in October you will find the paint still free from any sea growth, and you will not have had to haul out for a single day for scrubbing off or re-painting same.*

**THE BRIDGEPORT BRONZE MARINE PAINT CO.**
SELLING AGENTS, PAINT DEPARTMENT.
THE AMERICAN LACQUER CO., Bridgeport, Conn., U. S. A.

Cable Address: "Lacquerco Bridgeport."

VALENTINES VARNISHES

**IF YOU WANT TO SELL YOUR BOAT**
finish it with
**VALSPAR**
It forms a hard, tough coating of great and lasting brilliancy and will make your boat appear at its best.

**IF YOU WANT TO KEEP YOUR BOAT**
finish it with
**VALSPAR**
It withstands the elements better than any known spar varnish.
It works easy, dries quickly and
*It won't turn white*
Write for particulars
VALENTINE & COMPANY
New York Boston Chicago

VALENTINES VARNISHES

HOFFMAN'S
YACHT WHITE

The quality of the Paint is acknowledged to be the best by some of the largest ship builders and yacht owners in the country, and will give perfect satisfaction.

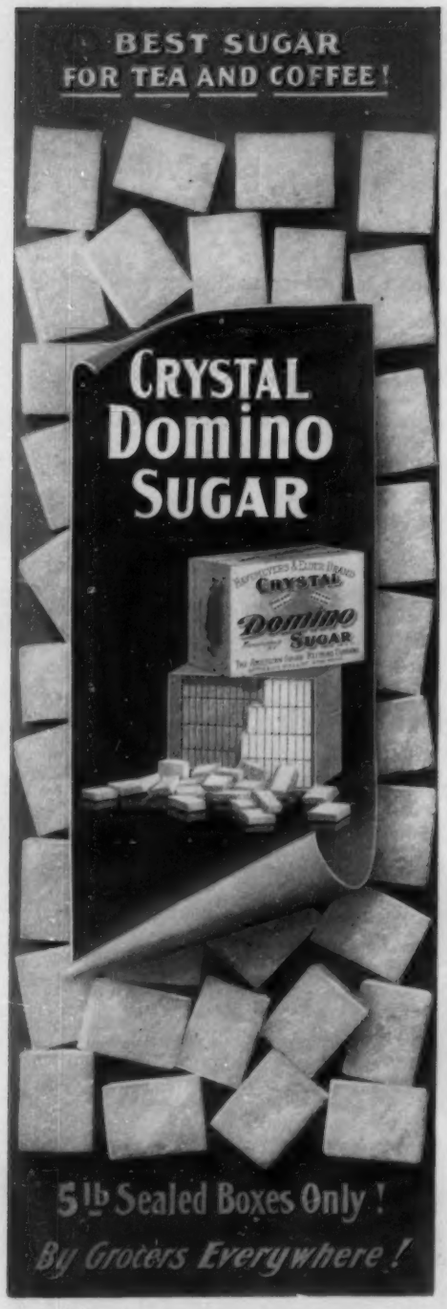
This Paint dries hard and is not affected by the action of salt water, and can be sandpapered and recoated without danger of powdering, blistering or peeling.

WHITE THAT WILL STAY WHITE prepared ready for use and put up in gallon, half gallon and quart cans.

ANCHOR BRAND
METAL POLISH

For Yacht Trimmings, Railings, Automobiles, etc. Produces a lustrous and lasting polish on brass, copper, nickel, and other metals.

J. W. HOFFMAN COMPANY,
434-440 Atlantic Avenue, BOSTON, MASS.




**High Grade Heavy Weight Tanks**

For Gasolene, Water and Air of any shape or dimensions desired for any pressure. We make only work of merit.

**"Light Competition Work Not Wanted."**

Galvanizing of all kinds of marine work.

**L. O. KOVEN & BROTHER**

**50 Cliff Street : : : New York**

**For the Youngsters who Want a Boat first and Fixings afterward.**

There is a place in motor boating for a hunting cabin cruiser, strongly, plainly built and finished, costing, with engine ready to run but without other fittings, something less than $1000. Of course, at these figures there would be nothing in the way of mahogany finish; metal work would be galvanized and there would not be a bit of polished brass aboard the craft. As a matter of fact, probably but two of the portlights would be hinged, the remainder being fixed glass. There would be no plumbing, no ice-chest and no accessories aboard.

Later on, the owner, or owners, could spend some extra money by installing conveniences and supplying hinged ports. There are any number of young men throughout the country who have a few hundred dollars in spare cash. Three or four of these could club together and purchase such a plainly finished, well-built craft and use her as a summer home and for cruising on holidays and vacations. And such a craft could be built well within their means. The real trouble seems to lie in the fact that when the average young man of this class considers the matter of a cruising motor boat he is shown a lot of boats whose finish and equipment represent a very large percentage of the purchase price. Thereupon he becomes frightened away and does not form the syndicate.

Now, this is not to be construed into any sort of an intimation that a cruiser with a mahogany trunk, polished brass, hinged portlights, Pantasote hair cushions, yacht plumbing, refrigerator and a lot of other high grade equipment, is not an extremely good thing. But for every man who can afford to purchase such a craft, there are in the neighborhood of a hundred just as anxious for life afloat who could not, but could buy the essentials and acquire the luxuries later, if they knew how and where to do it. During the time wheeling was popular and a high-grade wheel cost $150, there were any number of men who saved up the necessary money and became wheelmen at $150 per head. There are just as many of that class of men to-day. Group them together in syndicates of four, let each put $150, and you have $600, the nucleus for a cruising craft. An extra assessment of $50 or $75 apiece would give two or three hundred dollars above this, and with this amount they can get something aboard of which they can live.

We must not forget in these days of luxury, when the mention of a hunting launch brings up the idea of something costing from two to four thousand dollars, that it was not necessary for the old time cabin cat boatman or small sloop owner to have one-quarter the finish, polish or conveniences that we have grown to regard as so necessary. There is no particular reason why, because the motive power is a gasolene engine instead of canvas, that a man has to have everything that he has in his own home and possibly a few other luxuries for good measure. It is quite possible to rough it for a summer in a way that will allow one to dispense with a whole lot of extra fittings and have the boat well built and well modeled. It is a very easy proposition to commence as soon as she has been paid for to accumulate these luxuries and refinements one by one, and by the time the boat is a couple of years old her owner or owners may have a thoroughly equipped cruising craft, whose initial cost was not such that it scared them off from acquiring her. It is not everyone who can dig down into his pocket and produce $2,000 or $2,500 off the reel. No, nor every group of four men that can do this either; but it is possible in a great many more cases to find the necessary $600, $750 or $800 and then buy the extras, piece by piece, with a few dollars at a time.

**YACHTSMEN, CANOEISTS!**

**Can save about 20% by buying the BLUE Trade-Mark athletic goods, sold at Special BLUE Prices by Wm. Read & Sons (only).**

*Delivery free anywhere in the United States.*

Base-ball and basket-ball teams, tennis players, gymnasts, athletes, and base-ball players sold direct, saving the retailer's profit. Special terms to captains, managers, clubs and teams.

*Address*
WM. READ & SONS
TRADE MARK
BOSTON, MASS.

*Send at once for* BLUE Trade-Mark Catalogue No. 4.

**107 WASHINGTON STREET**

**Webber's Bathing Suits**

| | | | | | |
|---|---|---|---|---|---|
| No. 11 | Boys' | 2 Piece | Suits, | Plain, | $0.50 |
| No. 11 | Men's | 2 " | " | " | .75 |
| No. 14 | " | 2 " | " | " | 1.00 |
| No. 25 | " | 2 " | " | Fancy, | 1.00 |
| No. 32 | " | 2 " | " | " | 1.50 |
| No. 155 | " | 2 " | " | " | 4.00 |

Others at $2.00, $2.50, $3.00, $3.50.
Ladies' Bathing Suits, $2.00, $3.00, $4.00, $5.00.
All guaranteed. Return if not satisfactory.
GEO. F. WEBBER, Station F. DETROIT, MICH.

**Picnic Time is Near**

No other basket like this Hawkeye Refrigerator Basket for outings. Keeps contents cool on hottest days. A piece of ice in the ice compartment lasts 24 hours

**HAWKEYE**
**Refrigerator Baskets**

are built of rattan with lining of rust-proof metal, easy to keep clean. Asbestos and felt packing prevents heat penetrating. Piping around lid makes basket air tight. All sizes. Strong, hygienic, ideal for light housekeeping. Ask your dealer for a Hawkeye Refrigerator Basket. Write us for our free descriptive booklet. Gives dainty recipes.

BURLINGTON BASKET CO.
222 Main St., Burlington, Ia.

WE MAKE TO ORDER AND WE MAKE TO FIT
**LAUNCH TOPS, SPRAY HOODS AND BOAT CUSHIONS.**
**C. M. JACOBSEN, 238 Jefferson Ave., Detroit, Mich.**
—EVERYTHING IN THE MARINE LINE—

**TANKS**

GALVANIZED OR PAINTED

**GASOLENE TANKS**
**WATER TANKS**
**HIGH PRESSURE AIR TANKS**

Tanks for Mufflers, Air Whistles, Etc.

**WM. B. SCAIFE & SONS CO.**
Founded 1802 PITTSBURGH, PA.

Little Rhody II. and Dorothy Q. both equipped with Wilson & Silsby's Sails.—As a consequence it is a "toss-up" which wins.

# Notable Achievements in Sail Making !

Everyone knows of the remarkable record of "Little Rhody II.," pictured above, last season in winning ten first places, seven seconds and ten thirds out of thirty-three starts, and of her finishing second in the championship of the Boston and Corinthian Yacht Clubs and of the Massachusetts Yacht Racing Association, besides winning the Exposition Cup at the Jamestown races last September. And that of "Dorothy Q," which shared with "Eleanor" the honors of the racing of the "Q" Class in New England last summer. Both these yachts **WERE EQUIPPED WITH WILSON & SILSBY SAILS. The sails of "Eleanor," the crack Q boat of the country, WERE ALSO MADE BY US.**

Of a different sort of craft "Dervish," winner of the ocean race from Gravesend Bay to Bermuda, **spread canvas which came from our lofts.** Her sails were the object of much comment before starting because of **perfection of fit; and she went through without stretching or any injury to the sails.**

**You can also have a race winner this season IF YOU WILL COME TO US,** for **WILSON & SILSBY SAILS** are

# Sails that Fit Like a Glove

Good sails are as essential to the cruiser as to the racer. Like racing canvas, the sails of a cruising craft should possess qualities adapted for the work they have to do. Weight, texture, resistance to mildew, and strength are all important elements. **WILSON & SILSBY'S CRUISING SAILS ARE THE RESULT OF YEARS OF STUDY.**

Among a large number of successful yachts we have equipped are the following:

| | | | |
|---|---|---|---|
| **Vergemere** | **Weetamoe** | **Dervish** | **Intrepid** |
| **Alcyone** | **Constance** | **Spirit** | **Elmina II.** |
| **Effort II.** | **Resolute** | **Dorothy Q** | **Taormina** |
| **Ariadne** | **Katrina** | **Corona** | **Eleanor** |

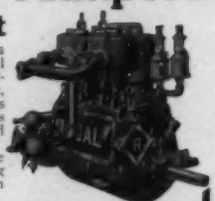
*THE FABRIC USED is in no small degree responsible for the success of our sails. It is made under our own formula, of the best combed peeler American cotton, and is the result of a lifetime's study of canvas. We also use Imported Egyptian Cotton if desired.*

# Wilson & Silsby

**Our Cable Address is "WILSAILS," BOSTON, W. U. C. C.**

**Rowe's Wharf, Boston, Mass.**

# Perfectly Adapted To Any Boat



No matter what kind of a boat yours is, there's a Regal Marine Engine *exactly adapted* to your needs. Four Cycle, Jump Spark Ignition Regals are made in all practical sizes and in both high speed and slow speed types.

Write at once for our fine *illustrated, descriptive* Catalog on Marine Engines, which tells you why

**Regal** Auto-type High Speed MARINE ENGINES

FOUR CYCLE

are the most dependable and serviceable to be had.

**Auto-type Regal Engines** for motor boats have minimum number of working parts for perfect operation. 3 to 5 H. P. Single Cylinder; 6 to 10 H. P. Double Cylinder; 16 to 20 H. P. Four Cylinder.

**Regal Slow Speed Engines** for Fishing Boats, Cabin Launches, etc., stand hardest tests under all conditions. Every one develops full horse power rating at slow speed. Sizes from 7 H. P. Single Cylinder up to 45 H. P. Four Cylinder. All *Regals* are absolutely guaranteed to "make good."

Send name today for free Book No. 6 on practical Marine Engine subjects.

SLOW SPEED HEAVY DUTY

Address **The Regal Gasolene Engine Co.** 52 W. Pearl St., Coldwater, Michigan

Health and vigor in every stroke. Light as a feather—staunch, swift and steady. Good for years of hard service.

The name plate guarantees quality and correctness of model and construction.

**Old Town Canoe**

Agencies in all large cities. Free catalogue.

OLD TOWN CANOE CO., 154 Middle St., Old Town, Me.

# Yacht Tenders

of finest selected cedar. Durable, light weight, easy rowing models, will carry an immense load. Finished in ash, oak or cherry.

**De Luxe**

# Row Boats & Canoes

of finest cedar and unsurpassed workmanship, lightest, neatest, finest models.

35 years of successful designing and construction are back of our products.

Special boats and motor boat hulls built to order.

Indian Girl Canoes at sporting goods dealers in all cities.

CATALOG ON REQUEST.

**J. H. RUSHTON, Inc.,**

Water Street, : : Canton, N. Y.


We have so much faith in our views on the subject that we have taken the matter up with several of the principal builders of the country, who have promised to furnish us with lines, designs and plans of open and cabin cruising craft which may be had at prices ranging from $250 to $1,500. At these prices it will be all boat and engine and the owners will be expected to rob their homes for kitchen and table ware and bed clothes, but they will have boats in which they can cruise and aboard which they can live, even though in the lower-priced craft they do so under home-made awnings. The series of articles describing just what may be had for these prices will begin in an early issue of YACHTING.

## THE LAKE WORTH REGATTA

(Continued from page 265.)

Fifth Race—Class F; course five miles.

| | Start. h. m. s. | Finish. h. m. s. | Elapsed Time. h. m. s. |
|---|---|---|---|
| Lamb | 3 00 05 | 3 17 27 | 0 17 22 |
| Dolphin | 3 00 51 | 3 15 56 | 0 15 05 |
| Bruiser | 3 03 33 | 3 17 42 | 0 14 09 |
| Trente-Sept | 3 02 24 | 3 15 50 | 0 13 26 |

Trente-Sept the winner, with Dolphin second.

Sixth Race—Class EF; course, fifteen miles.

| | | | |
|---|---|---|---|
| Ferro | 3 48 07 | 4 52 27 | 1 02 20 |
| Dolphin | 4 01 32 | 4 46 35 | 0 45 03 |
| Bruiser | 4 04 05 | 4 47 38 | 0 43 33 |
| Trente-Sept | 4 06 32 | 4 48 01 | 0 41 29 |
| General | 4 08 15 | 4 46 02 | 0 37 46 |

Dixolite and Lamb did not finish.

General the winner, with Dolphin second.

In the sixth event Ferro made a beautiful start while Trente-Sept lost twenty seconds through engine trouble, a complaint which Secret had the day before, and a complaint, it may be added, which was rare on all regatta days. Ferro finished the first lap first, General overtook Trente-Sept soon after the start, but lost in making too wide a turn, Trente-Sept gaining appreciably on her rival at all turns. Dolphin crossed the line first at the end of the second lap, with Ferro next and Bruiser in hot pursuit. General was next, having lost Trente-Sept. Dixolite had dropped to last place. The finish was as follows: General, Dolphin, Trente-Sept, Ferro. Dixolite did not finish.

A list of boats entered and their owners follow:

| | Name of Boat. | Owner. | Address. |
|---|---|---|---|
| 1 | Baby Bullet | G. F. Paddison | Eau Gallie, Fla. |
| 2 | Bruiser | J. K. Clarke | Ardmore, Pa. |
| 3 | Dixie | E. J. Schroeder | Jersey City, N. J. |
| 4 | Dixolite I | Robert N. Dixon | New York |
| 5 | Dolphin | Eugene De Kleist | Buffalo, N. Y. |
| 7 | Hot Stuff V | B. J. Southall | Miami, Fla. |
| 8 | Irene | J. W. Taylor | Cocoa, Fla. |
| 10 | Lamb | Warren Sneden | Jensen, Fla. |
| 11 | Meteor | Roy Thomas | W. Palm Beach, Fla. |
| 12 | Nebo | G. M. Marshall | New Smyrna, Fla. |
| 13 | 'Possum | H. L. Willoughby | Newport, R. I. |
| 15 | Secret | J. H. Allen | Daytona, Fla. |
| 16 | Trente-Sept | Geo. Gingras | Rockledge, Fla. |
| 17 | General | E. R. Walker | Detroit, Mich. |
| 18 | Kitty Sparks | Chas. Furthman | New York |
| 19 | Red Bird | George D. Dewey | New Smyrna, Fla. |
| 20 | Ferro | | Hobe Sound |

## QUESTION BOX

### Preventing Mildew.

Motor Boat Editor, YACHTING:—What is the cause of mildew, and how can I prevent the canvas awning and curtains of my launch from getting mildewed when stowed? I have heard a good deal about trouble from mildew, and am rather scared of it.

W. E. G.'B.

Mildew is caused by dampness. If awnings, curtains, sails and so on are put away while still damp they are sure to mildew. See that they are absolutely dry when stored, and that they are put in a perfectly dry place, and you should have no trouble. It will be wise, however, to make an inspection occasionally to make sure there is no lurking dampness and to give the canvas an airing. New canvas will mildew more easily than old, the dressing used in manufacturing producing this effect.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## —GINGER ALE—

is a most delicious and pure ginger ale. Produced with scientific care and epicurean judgment. Of pure water, sugar and ginger, it is always the same.

*If your dealer has it not, let us know*

CLICQUOT CLUB CO. Millis, Mass.

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Our 28 ft. launch complete with cabin and 7 horse power engine—$650.00. Launch hulls, complete, less engine, $8.00 per ft. Hulls less woodwork, $6.00 per ft.

Write for our catalogue of well-made steel skiffs, hunting boats, life boats, and launches.

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Boat and Skiff Mfgrs., Box O, Grafton, Ill.

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# MENNEN'S

BORATED TALCUM

## TOILET POWDER

and insist that your barber use it also. **It is antiseptic,** and will **prevent** any of the skin diseases often contracted.

A positive relief for **Sunburn, Prickly Heat, Chafing,** and all afflictions of the skin. Removes all odor of perspiration. **Get Mennen's**—the original. **Put up in non-refillable boxes—the "box that lox."** Sold everywhere or mailed for 25 cents. Sample free.

*Try Mennen's Violet* (Borated) *Talcum.*

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Newark, N. J.

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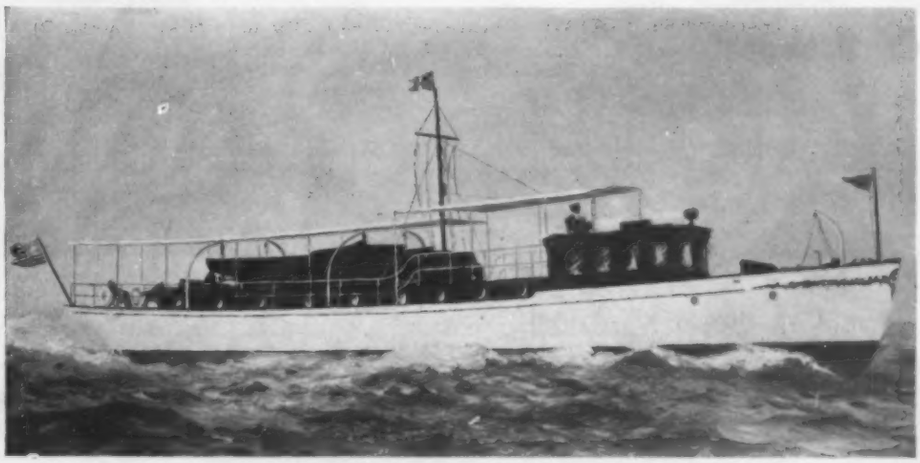
## REPRESENT THE HIGHEST TYPE OF SEAWORTHINESS

Just as an illustration of what can be accomplished on an over-all length of 70 ft. we show a cruising power yacht that we are now building for a prominent yachtsman.

She has two large double staterooms, a good-sized saloon, which will offer additional sleeping quarters for two persons, a large bath-room, galley, engine room and crew's quarters below deck.



A NILSON 70-FOOT CRUISING POWER YACHT.

In addition, she has a dining room in the deck-house, from which she may be steered in bad weather.

A feature of her interior arrangements is the ample storage space with which she is provided.

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have stood every test for nearly fifty years.

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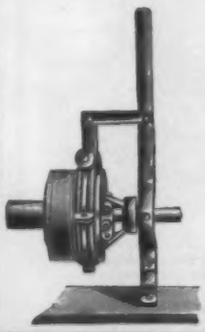

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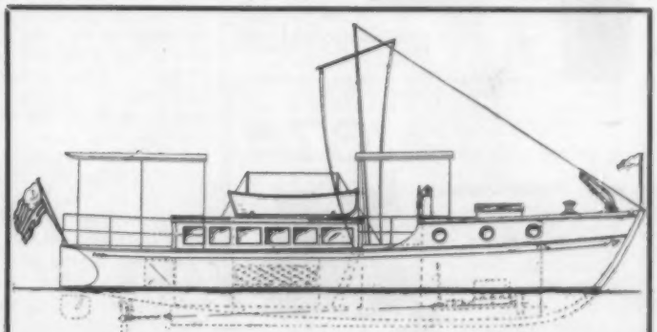

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We replace any defective parts at any time. IF YOU COULD PURCHASE ONE OF OUR LAUNCHES AT THE SAME PRICE AS AN ORDINARY LAUNCH, would it not interest you? WE ARE OFFERING SPECIAL PRICES.

Send 4 cents for postage on Catalog No. 1 describing Motors and Motor Boats, or Catalog No. 2 describing Row Boats, Canoes, and Hunting Boats, to

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Or call at one of our Branch Stores at

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Fastest Cruising Motor Boat IN THE WORLD

of its length and beam, the yacht "Grayling," shown above, is equipped with three 40 h. p. Gray Motors (120 h. p.), regular stock motors, not in the slightest degree different or better than any of the forty Gray Motors turned out of our factory every day, from the little 2½ h. p., $67.50, up. And yet with these same "run-of-factory" motors, the "Grayling" won the Time Prize in the 200-mile race on Lake Erie last August—from Toledo to Detroit River, to Cleveland and back to Toledo. Write for interesting story of this race.

6 h.p. Engine, with complete boat outfit, [NOT BARE] Shaft, Propeller Wheel, Stuffing Box, Muffler, Batteries, Spark Coil, Wire, Switch etc., all ready to install in your boat. $97.50

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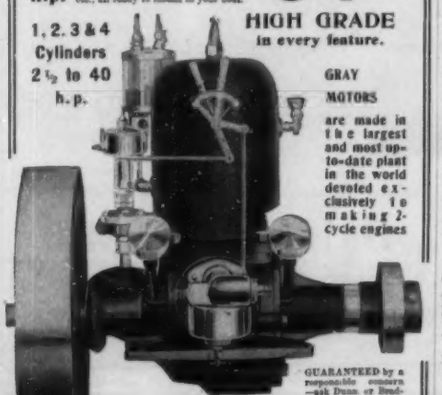
GRAY MOTORS are made in the largest and most up-to-date plant in the world devoted exclusively to making 2-cycle engines



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Send for catalog of 16-21-25 and 30 ft. semi-speed and pleasure boats equipped with Gray Motors—or we will furnish your local boat builder plans of Gray Motor boats free if you install Gray Motors.

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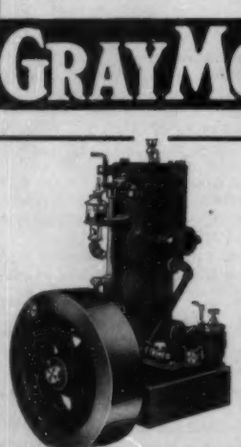
GRAY MOTORS





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A Motor of reliable enduring qualities, easy control, light weight but strong rigid construction.

It gives steady service.

2½-5-7 h.p. single cy.
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Boston Agent—
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## WHERE SIX CYLINDERS ARE BETTER THAN FOUR

(Continued from Page 286.)

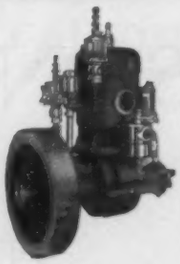
stand the great difference between the two types in this respect—a difference far greater than any difference in vibration or smooth turning effort—let us look at the two diagrams, Figs. 1 and 2.

In Fig. 1, the curves A A A A may be taken to represent the piston velocity of a four-cylinder engine at full speed. The piston starts at rest at the top centre, accelerates with a rush to a maximum velocity at midstroke, and as rapidly comes to rest again. For the purpose of this examination the influence of the connecting rod angularity is slight and may be neglected. If the air sucked through the carburetor had no inertia at all, its velocity would rise and fall with that of the pistons, and the curve A A would represent the air velocity as well as the piston velocity. As a matter of fact, at such high speeds the air velocity would be nearly uniform; and would be represented by a wavy line somewhat below B B, which is the line of mean velocity for the curves A A.

As we reduce the throttle, the engine slows down, and the air stream slows down still more, since at reduced speed the engine is not taking full charges. The air stream also loses much of its inertia, and follows more and more the curve of piston velocity. At somewhere between half and one-third speed the air stream would follow the velocity line C C C C if it had no inertia. Actually its velocity is probably not far from the dotted curve D D D D, lagging behind the pistons and never falling to zero. If we throttle the engine to a materially lower speed, we notice that it becomes weak and uncertain, and does not pick up smartly when the throttle is opened. What this means is that the lower points of the air velocity curve have gone below the speed—represented by the broken line E E—under which the particular carburetor employed fails to make a good mixture. It still makes some kind of a mixture, and at mid-stroke the mixture is all it should be; but the first and last parts of each charge act like a dead weight on the middle portion. When the air velocity curve falls wholly below E E the engine will not run at all, except perhaps to keep itself barely turning when the clutch is out. Curve F F F F represents this condition.

Now let us look at the "six." Fig. 2 shows the way its suction impulses overlap, and the heavy line at the top shows how the low parts at beginning and end of each curve add up to make a continuous wavy curve which nowhere varies more than a few per cent. If we take two engines of equal power—say a 4 7/8x6 inch four-cylinder and a 4x4¼ inch six-cylinder, running respectively at 750 and 1050 revolutions per minute—the two diagrams, Figs. 1 and 2, will correctly represent the relative frequency of their impulses when developing the same power. Since for equal powers the mean flow of gas will be the same in both, and both will use the same size of carburetor, we see that the "six" will throttle down till it develops but half the power of the "four" before its curve of air velocity drops below the "dead line" E E. And however far it is throttled, the air velocity will always be uniform, always the best possible for that speed; and therefore the carburetor will be as favorably circumstanced as possible to do its best.

Up to the present time, manoeuvering ability has been little in demand compared with other things; but the need for it is clear, and for the uses above described it is by far best bestowed by the six-cylinder engine.

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Manufactured by
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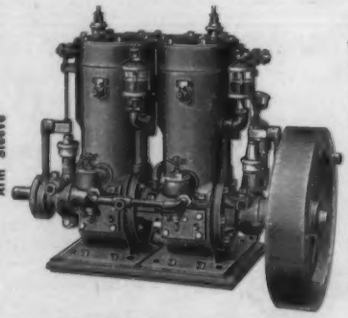
The only Engine with a Direct Oiler to the Crank Arm Sleeve



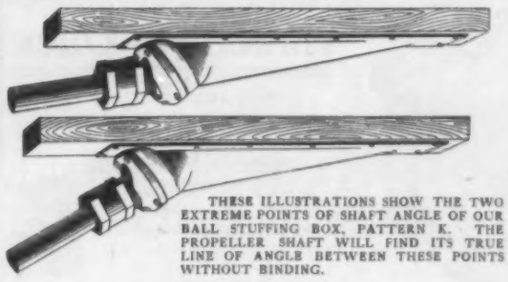
The Engine has more power than any other Engine made and sold for the same H.P.

The Engine has but three working parts

Bore 5 H.P. Engine, 3⅜ inch; stroke 4 inch
Bore 3 H.P. Engine, 4⅛ inch; stroke 4 inch
Bore 5 H.P. Engine, 3⅜ inch; stroke 4 inch
Bore 8 H.P. Engine, 4⅜ inch; stroke 4 inch

Weight, 2 H.P., 140 pounds — Weight, 5 H.P., 275 pounds
Weight, 3 H.P., 165 pounds — Weight, 8 H.P., 302 pounds

We guarantee them to be EQUAL TO BEST IN THE WORLD



THESE ILLUSTRATIONS SHOW THE TWO EXTREME POINTS OF SHAFT ANGLE OF OUR BALL STUFFING BOX, PATTERN K. THE PROPELLER SHAFT WILL FIND ITS TRUE LINE OF ANGLE BETWEEN THESE POINTS WITHOUT BINDING.

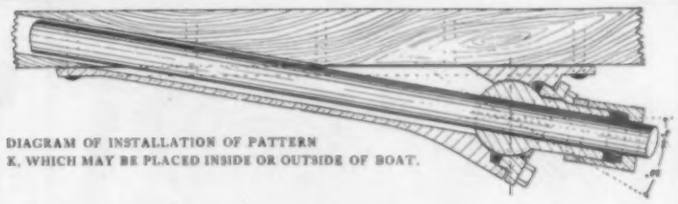


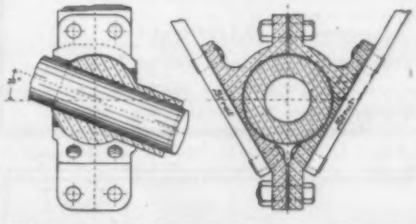
DIAGRAM OF INSTALLATION OF PATTERN K, WHICH MAY BE PLACED INSIDE OR OUTSIDE OF BOAT.

# THESE INDISPENSABLE MOTOR BOAT DEVICES

## Have Inaugurated a New Era in Motor Boat Construction

¶ Since the advent of the flat stern, or so-called torpedo stern boat—manifestly so superior for speed purposes—the question of shaft suspension and protection has been of great importance to the designers and builders of such boats.

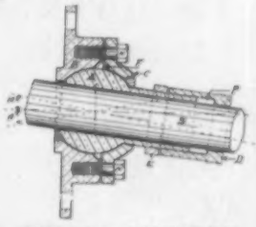
¶ A shaft log, either passed through the keel or bolted in two sectons to the same, is a crude and imperfect device, necessitating the use of a heavier keel, and in most cases a mass of timber and deadwood, which is detrimental to the speed and turning qualities of a boat—therefore objectionable.



PATTERN H. STANDARDIZED BALL HANGER BEARINGS. FURNISHED WITH TWO STRUTS INDEPENDENT OF HUBS.

¶ Our Pattern K Stuffing Box and our Ball Hanger Bearing —Standardized— eliminate this objection. Your boat will be stronger, lighter, more speedy and will turn quicker, consequently our devices will be *indispensable* in the future construction of these boats.

¶ Furthermore, they are more economical in first cost of construction, and also in subsequent operation of boat.



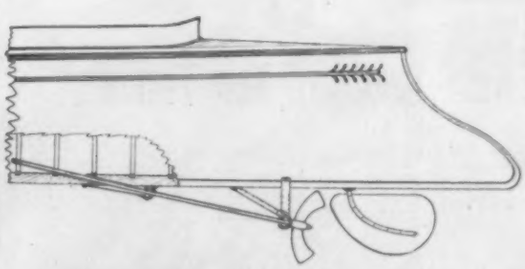
PATTERN L. STUFFING BOX. WHEN WORN, A NEW BALL IN HOUSING MAKES A NEW STUFFING BOX.

¶ Our Ball Stuffing Box, Pattern K, and Ball Hanger, Pattern H, are especially desirable and applicable in the construction of Twin Screw Boats, saving a large amount of work on the Hull, giving an easy adjustment of Hanger and a perfect alignment of Shaft.

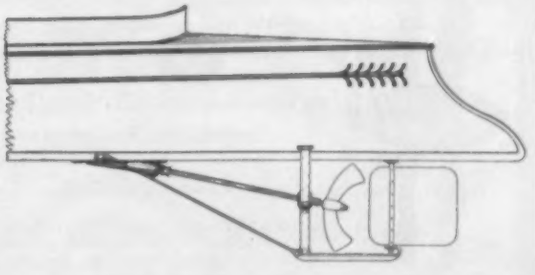
# BEFORE YOU BUILD

**Send for Our Illustrated Explanatory Booklet**

## GLENS FALLS MFG. CO., Glens Falls, N. Y.



Patterns H and K attached with and without Skeg



PATTERN K ELIMINATES THE SHAFTLOG WHICH WEAKENS THE KEEL. IN RACING BOATS WHERE WEIGHT IS A CONSIDERATION, A LIGHTER KEEL, IN CONJUNCTION WITH OUR PATTERN K, IS PRACTICAL.

OUR BALL HANGER PATTERN H WITH OUR PATTERN K GIVES TRUE LINE OF SHAFT WITHOUT BINDING.

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**Only one man and one lever are required to control any size motor boat if equipped with**

## The ROPER SAFETY PROPELLER

It responds instantly to the slightest movement of the lever without jar, jolt or strain to boat or engine. Dangers of the dead engine are entirely eliminated or reduced to a minimum.

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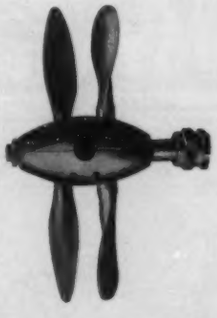
Positively the **Safest, Simplest** and **Most Practical** Propeller made. It prevents the engine from racing and is operated by one simple easy working lever. Can be started, stopped, sent at any speed desired or **reversed instantly** without causing engine troubles.



"Since you installed your "Safety Propeller" in my launch it has given me the most satisfaction of any propeller I have ever used. I can thoroughly recommend it as being a great addition to anybody who owns a power launch. Trusting you will meet with every success."—COM. GEO. M. HANNAN, South Boston Yacht Club.

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is as necessary to your engine **as oil,** and that its use prevents

**CARBON DEPOSITS**

and keeps piston, piston rings, valves and valve stems in the **pink of condition.** Removes **carbon** and **increases power 20 per cent.**

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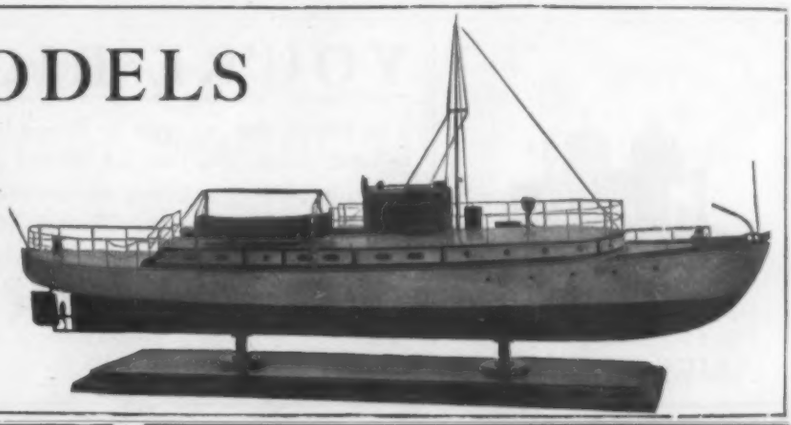

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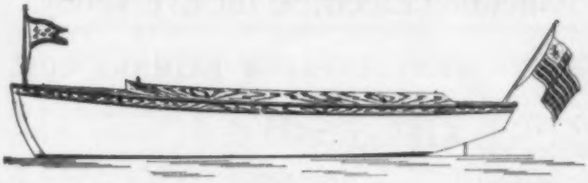

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With *Pioneer Perfect Frames* you can build your boat complete for *one-third* the *boat-builder's price.* With Pioneer Perfect Frames come, *absolutely free,* plank patterns and detailed instructions for finishing your boat, so *accurate* and *simple you cannot fail.* Each piece is marked where it should go. Reassemble them, nail on planks and the *lines of your boat are perfect. Order to-day*—have your boat in the water early. Set up the frame—see the simplicity of the Pioneer System. If it seems too much labor to finish it yourself, *we have planking, decking, coaming, etc., necessary to save you this work*—also hardware, fittings and engines—perfect as our frames and *at the same low price.*

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They are built of smooth, pressed steel plates with air-chambers in each end like a life-boat, and don't crack—leak—swell—dry out—wear out or sink. They are strong—safe—seaworthy—indestructible and much lighter, more buoyant and faster than wooden boats. Every boat is guaranteed. **The ideal boats for sportsmen, families, boat liveries, resorts, parks, etc.**

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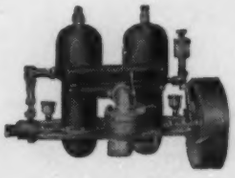


# YOU'RE RIGHT

You believe that we have a Motor that has won universal praise, also that our Motors perform their duties like faithful servants; also the more you work 'em the better you like 'em. There is a reason. Write for catalog and we will tell you why we know

# YOU'RE RIGHT

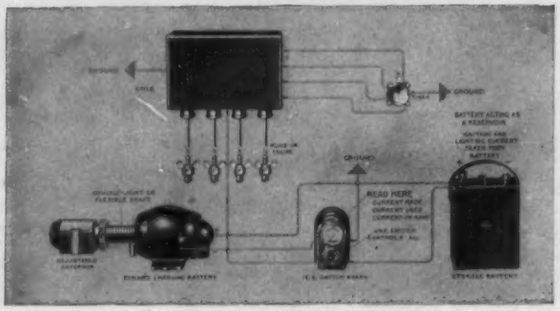
PRICES

| | | |
|---|---|---|
| 2 H. P., | - | $ 58.00 |
| 5 H. P., | - | 125.00 |
| 10 H. P., | - | 200.00 |

WRITE FOR AGENCY AND CATALOG

2 to 16 H. P. Motors

**AMERICAN MOTOR COMPANY, - - Eau Claire, Wisconsin.**



"Be sure you're right"—be sure of your ignition current—before you go ahead. It's dangerous to take chances in motor boating; but you take no chance at all if you have an

**Apple Ignition System**

"Floating the Battery on the Line."

installed in your boat.

The Apple Ignition Dynamo, the central feature of our system, furnishes an unfailing supply of current for ignition. It keeps the battery always charged, while current is drawn direct from the battery as needed.

It not only gives a sure source of current for starting, running and testing, but insures a reserve to be used in emergencies. Can be used to run electric lights also.

Be sure to write to-day for complete information about this system, so you can have it on your boat all this season. Ask for catalog.

**Dayton Electrical Mfg. Co.,** 99 St. Clair Street Dayton, Ohio

# IGNITION SUPPLIES

AND

## "Something Electrical for Everybody."

### MARINE WEATHERPROOF PRIMARY COIL

This coil is made for make-and-break ignition. It gives a hot, intense spark. Consumes less battery than most other makes. It is waterproof, compact, well made and reliable.

No. 16489, . . . . . $1.25

FAVORITES

| | |
|---|---|
| Red Seal Dry Battery, type "A," . | $ .15 |
| Manhattan Ignition Switch, No. 16350, | .50 |
| Mesco Jump Spark Coil, No. 16280, . | 4.00 |
| Mesco Battery Connector, No. 16352, | .03 |
| Watertight Pushes, No. 1376, . . | 1.00 |
| Waterproof Bells, 6 in. Gong, No. 1990, | 2.50 |

Catalogue Y 22 is Yours for the Asking.

**Manhattan Electrical Supply Co.,**

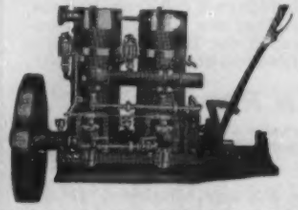
17 PARK PLACE (through to Murray St.)

Branch, 110 W. 42nd St. (after May 1st) 188 Fifth Ave.,

NEW YORK. CHICAGO.

# Winner of Chicago - Mackinac Endurance Race

THIS is the engine that won the long distance race from Chicago to Mackinac on July 20th, 1907, proving the endurance and reliability of our machine. We quote the following from a letter from the owner of "SWASTIKA," winner of the race:



"We are pleased to inform you that we won the Mackinac long distance race on July 20th, with our 42 x 10 motor boat "SWASTIKA" with your three-cylinder 16 H. P.

**FAY & BOWEN ENGINE**

We made the 332 miles in 36½ hours under rather trying conditions, such as heavy seas, squalls, thick fogs, etc. Our boat was launched May 20th, and on the 21st without anyone in the crew that had had any experience with your engine, we started on our 200 mile trip to Chicago, which was made without any difficulties whatever."

We also build a successful kerosene engine Write for catalogue of engines and boats

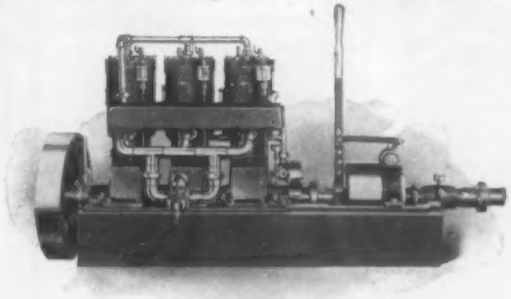
**FAY & BOWEN ENGINE COMPANY, - - 115 Lake Street, Geneva, New York**

# THE BRIDGEPORT.....

Sizes 1½ to 28 H. P. *"The Motor That Motes"* 1, 2, 3 and 4 Cylinders

Is a rare combination of power, quietness, strength and reliability that fits it equally well for use on the pleasure craft or the fisherman's boat.

**The Bridgeport means more solid comfort and fewer repair bills than any other engine yet built.**



**Every working part of the Bridgeport is easily accessible, and each part is interchangeable.**

TYPE C.—THREE CYLINDERS

From first to last, each and every bit of material that goes into a Bridgeport Motor is rigidly inspected and tested. . . . . .

*Send For Catalogue*

## THE BRIDGEPORT MOTOR CO., Inc.

BRIDGEPORT, CONN.

New York, N. Y.: BOWLER, HOLMES & HECKER CO. 141 Liberty St.

Jersey City, N. J.: BRUNS MOTOR EXCHANGE

Boston, Mass.: 31 Central Wharf

Portland, Me.: STOUGHTON-FOLKINS CO.

Providence, R. I. W. COLEMAN & SON

Marinette, Wis.: E. S. FIDLER

# SMALLEY

MARINE GAS ENGINES

Manufactured only by

## GENERAL MACHINERY COMPANY

73 TRUMBULL AVENUE,

BAY CITY, MICH., - U. S. A.

This company is a reorganization of and successor to Smalley Motor Co., Ltd., and has taken over all patents, patterns, jigs, templets, and the complete plant, stock in trade and good will of that Company. There has been no cessation of production of SMALLEY engines or the supplying of parts. Nor will there be. On the contrary, more careful attention than ever before is being given to the production of SMALLEY engines in all their perfection of mechanism and detail, with original designers and all old employees in their accustomed places. We have lately been advised that representatives of some ex-agents for SMALLEY engines have been asserting that the SMALLEY and its maker are a thing of the past. This is regrettable in so far as it might deter some from getting the engine they really want, and it impels us to thus publicly announce ourselves and denounce our traducers. For the discomfiture of the latter we would ask them if they noted the achievements of our boat, "General," with her M-6B SMALLEY engine (60-70 H. P.), and Mr. deKleists' boat, "Dolphin," with her M-3B SMALLEY engine (20-25 H. P.), at the Palm Beach, Fla., regatta, March 17-20, 1908. It takes really good machines, not hap-hazard made ones to win eleven cups in one regatta. The "Dolphin's" engine was built by our predecessors and overhauled by us in February. The "General's" engine was built complete by us in January. Is the SMALLEY a thing of the past? Only in the minds of those who wish it was. Its past is a record of greatness. It is a thing of the present in its careful and painstaking production by people who know the worth of good work and who value the kindly appreciation and plaudits of a discriminating public. It is a thing of the future in all that makes for leadership. It has led in the past; it leads and will continue to lead in the future. The carefully and accurately determined arrangement of ports and perfect adjustment of parts carefully and faithfully machined and tested give the SMALLEY not only the power and promptness that make them so incomparably speedy, but the power and flexibility and reliability with economy in fuel consumption that make them pre-eminently the best motive power for merchandising craft and pleasure boating. Our new catalog, No. 19, which we will mail on request, is a mine of interesting information about SMALLEY engines and their performances.

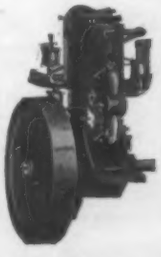
GENERAL MACHINERY COMPANY.

# GASOLINE LAUNCH EXPLOSION

Block Island, R. I., Aug. 1.

A gasoline launch picked up with the engine badly wrecked by EXPLOSION. The launch had no occupant.

## KEROSENE ENGINE CANNOT EXPLODE



Be on the safe side and get an INTERNATIONAL Kerosene Oil Engine. Maximum power, simple, reliable, economical, durable. Can be started instantly. Write for Catalogue I. Highest testimonials from users of our engines from all parts of the world. We also make Stationary and Portable engines.

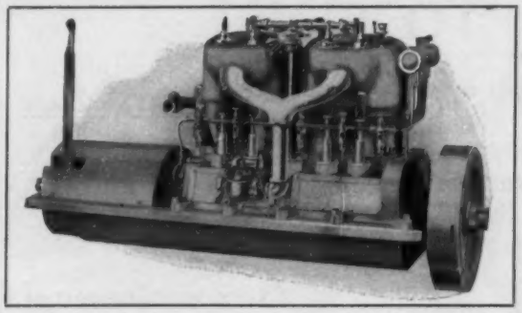
## INTERNATIONAL OIL ENGINE CO.

Salesroom: Thoroughfare Building,

57th Street and Broadway, - New York City.

Factory:

Danielson, Conn.



# BUILT FOR PARTICULAR PEOPLE

Discriminating buyers are placing their orders for Sterling Engines because they want all that is best in marine engine construction. They find it pays to investigate and make comparisons. There is a whole lot of comfort in owning a reliable engine, and it's worth the trouble to take time to look into the merits of an engine before you buy. We'd like to SHOW you some of the good points about STERLING ENGINES. Write for catalog and prices. Tell us the size of your boat and the speed you wish to develop.

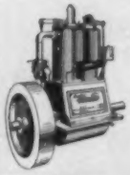
**THE STERLING ENGINE CO., Buffalo, N. Y., U. S. A.**

Members National Association of Engine and Boat Manufacturers

DEALERS—New York: Edge & Purdie, 136 Liberty St. Boston: Walter J. Forbes, 220 Congress St.
Portland, Ore.: Beeman-Spaulding Co., 71 Front St. Kingston, Ont.: Kenneth A. Cameron.

# TWICE-TWO MOTOR

**New Era in Construction**



Higher efficiency; greater reliability; more compactness; simpler. No gear wheels or cam shafts, no smoke, no odor, no compression in crank case. Single cylinder, 5 in. bore, 6 in. stroke, 600 R. P. M. Gives 12 Brake Horse Power. Rating guaranteed actual horse power delivered on the brake at speeds indicated.

Write for Illustrated Catalog.

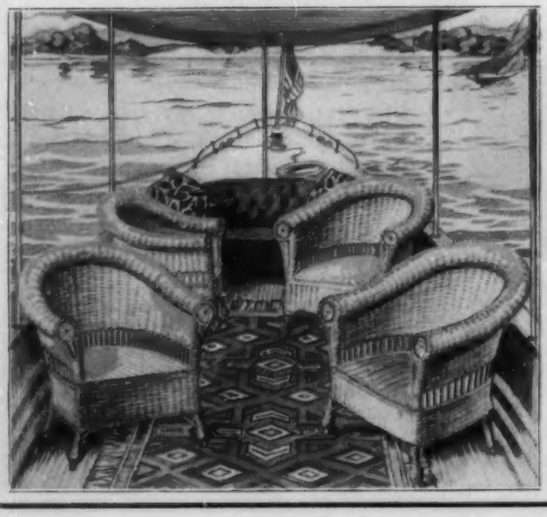
Simplicity of the TWO-CYCLE with more efficiency than the FOUR-CYCLE

**THE TWICE-TWO CYCLE ENGINE CO., Inc., 16 South Canal Street, CHICAGO.**

**IMMEDIATE DELIVERIES on 16, 18, 20, 22 and 25-foot Power Boats.** Last season we built a 28-ft. pleasure boat for A. N. Ellis, Canastota, N. Y. We are now shipping one 32-ft. torpedo pleasure boat, one 30-ft. boat, one 25-ft launch of the "Ellis" pattern to parties who liked his boat. **Lindley** boats gives satisfaction. We have pleasure, speed and cabin boats in stock and can make immediate delivery on 15, 18, 20, 22 and 25-ft. boats. We also build to order. Write to-day for particulars and prices.

**W. H. LINDLEY CO., 209 Main St., Canastota, N. Y.**

# Fiber-Rush Boat Furniture



Write for our book illustrating and describing Fiber-Rush Chairs and Furniture for Yachts, Passenger Steamers and Motor Boats.

Fiber-Rush is especially adapted to boat furniture. It is a light, tenacious fiber, which is made water-proof by our own, exclusive process. It is light, convenient and durable, and always retains its soft, decorative green tint on salt or fresh water in any climate. It adds a feature of elegance and refinement to any boat, small or large. Many yachts and steamers are furnished throughout with Fiber-Rush, the effect being very attractive. We make a full line of this furniture for the home as well as the boat—chairs, tables, desks, settees, swings, etc.

Most leading dealers sell Fiber-Rush Furniture or they can get it for you from us. If you cannot buy it in the stores, write us and we will send you the name of a dealer who will supply you. Address our nearest office.

**THE FORD & JOHNSON CO.**

Largest Makers of Chairs and Fine Furniture

Chicago, New York, Boston, Cincinnati, New Haven, Conn., Atlanta, Ga., Michigan City, Ind.

Illustrated Booklet Sent Upon Request

**FOX MOTORS**
HIGH SPEED - HEAVY DUTY

We are the only manufacturers who sell on the bore and stroke of our cylinders; and agree to refund your money if, after 30 days' trial, you see fit to return the engine. Write for catalog.

THE FOX REVERSIBLE GASOLINE ENGINE CO.
212 Front St., South Cincinnati, Newport, Ky.

**FOX MOTORS**
HIGH SPEED - HEAVY DUTY

We offer more real motor value, larger cylinders, more power, service and satisfaction than any other manufacturer. Our catalog claims it; our customers confirm it; our sales prove it.

THE FOX REVERSIBLE GASOLINE ENGINE CO.
212 Front St., South Cincinnati, Newport, Ky.

**FOX MOTORS**
HIGH SPEED - HEAVY DUTY

We sell on the bore and stroke of our cylinders and their capacity in cubic inches. To realize the importance of this matter, send for our catalog.

THE FOX REVERSIBLE GASOLINE ENGINE CO.
212 Front St., South Cincinnati, Newport, Ky.

**FOX MOTORS**
HIGH SPEED - HEAVY DUTY

Our "square deal" policy is as important to us as it is to the buyer. We want only satisfied customers; hence we agree to refund your money, if FOX MOTORS fail to please you after 30 days' trial. Write for catalog.

THE FOX REVERSIBLE GASOLINE ENGINE CO.
212 Front St., South Cincinnati, Newport, Ky.

**FOX MOTORS**
HIGH SPEED - HEAVY DUTY

Your money, if invested in FOX MOTORS, pays for engine value, not sales expense or losses by bad accounts. Our motors, our sales policy and our guarantee will appeal to your judgment. Write for catalog.

THE FOX REVERSIBLE GASOLINE ENGINE CO.
212 Front St., South Cincinnati, Newport, Ky.

**FOX MOTORS**
HIGH SPEED - HEAVY DUTY

Our 15 sizes of High Speed and Heavy Duty Motors are fully described in our catalog. The surest, most direct and most convincing motor catalog ever issued. Write for it.

THE FOX REVERSIBLE GASOLINE ENGINE CO.
212 Front St., South Cincinnati, Newport, Ky.

**FOX MOTORS**
HIGH SPEED - HEAVY DUTY

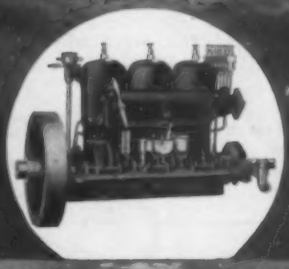
Buy on the bore and stroke of the cylinder, not on the manufacturer's rating. There is a big difference. It will pay you to examine our catalog before buying. Write for it.

THE FOX REVERSIBLE GASOLINE ENGINE CO.
212 Front St., South Cincinnati, Newport, Ky.

# The SUN ALWAYS SHINES on a FERRO

The Engine that the Expert Engineer Finds Satisfactory In Every Respect

"FERROS ARE RUN IN THE NORTH"



The Engine any Woman Can Operate and Keep In Good Running Order

"FERROS OPERATED IN THE TROPICS"

SOLD EAST AND WEST

MADE IN 10 SIZES
1½ HP TO 25 HP
ONE-, TWO-, AND THREE-CYLINDER

SEND NAME AND ADDRESS FOR CATALOG, OR 10 CENTS FOR "1908 REVISED PRACTICAL TREATISE ON MARINE GASOLINE ENGINE." CONTAINS MORE REAL GAS ENGINE INFORMATION THAN ANY OTHER BOOK PUBLISHED TO DATE.

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## TOWER'S FISH BRAND OILSKINS

**For Yachting and Motor Boating**

Exposure to the elements demands an Oilskin that insures dryness and warmth; combined with these features must be the means for freedom and ease of bodily movement that a sport so active necessitates; and last, but by no means least, durability. The FISH BRAND Yachting Garment is a thing apart from the ordinary Oilskin. Designed to fill a specific need, they are cut full, with easy, graceful lines, and provided with corduroy collars and hand-sewed ivory buttons. The color is many shades lighter than that of the regular yellow oilskin.

**Every Garment Guaranteed Waterproof**

TOWER'S FISH BRAND

**The Mark of Excellence**

This Trade Mark is on the silk label sewed to every garment.

A very popular garment is our FISH BRAND LADIES' LONG COAT, reaching to the shoes. Silk-lined soft hats that may be folded and carried in the pocket are made for both men and women. Our line for men comprises long coats, medium long coats, jackets and pants. Pants are furnished with belt straps.

| | | | |
|---|---|---|---|
| Men's Yachting Coats, long | $4.00 | Ladies' Yachting Long Coats | $4.00 |
| Men's Yachting Coats, med. long | 3.00 | Automobile Frocks | 6.00 |
| Men's Yachting Suits | 4.00 | Soft Hats, silk lined | 1.00 |

Your outfitter has them or will get them for you. If not, send order and price to us.

A. J. TOWER CO. Boston - New York - Chicago

## WHAT GRAPHITE SHALL I USE WITH THE OIL?

AUTHORITIES, both technical and practical, agree that **Flake Graphite** is the one best form for lubricating purposes.

**Flake Graphite** attaches itself directly to friction surfaces making smooth their microscopic irregularities.

The coating provided by **Flake Graphite** is durable and prevents absolutely all cutting and seizing.

Less oil is required when **Flake Graphite** is used, and this oil does its work more efficiently because it is relieved by the **Flake Graphite** of the severer lubricating duties.

Write for special information of value to all owners of every kind of motor.

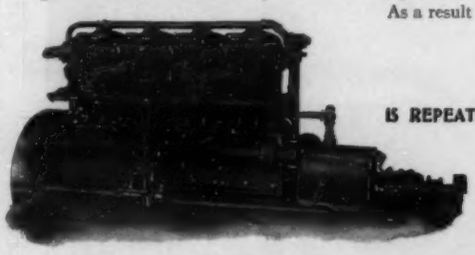
JOSEPH DIXON CRUCIBLE CO.
JERSEY CITY, N. J.

## This is Important to You

Perhaps you know that the U. S. Government selected the Jager engine for use in the navy, the Revenue Cutter Service and the Department of Commerce and Labor for special service in the Arctic, the Temperate and Torrid Zones.

But here is the most important point to you: Very careful records of the performance of the Jager Engine have been kept in each of these departments for the guidance of various other departments in the purchase of gasoline engines

As a result of this painstaking care, the



# Jager Marine Engine

IS REPEATEDLY SELECTED, WHILE OTHER MAKES, SUBJECTED TO THE SAME TESTS ARE DISCARDED

This means something to YOU if you need boat power. You can get a Jager Engine of any size from 3 to 60 H.P. and have the comfortable feeling of knowing you have the best there is to be had.

WE MAKE 1, 2, 3, 4 AND 6 CYLINDER ENGINES

Write for illustrated catalogue containing information you ought to have. Also send for special pamphlet on our MARINE TYPE DIRECT CONNECTED UNITS for the electric lighting of yachts.

**Charles J. Jager Company** 281-283 FRANKLIN STREET, BOSTON, MASS. or, 33 CANAL STREET, PROVIDENCE, R. I.

## Durkee's Patent Deck Plates

Lock pattern to prevent stealing of Naptha. . .

Keyless plate. Does not require key to open or close.

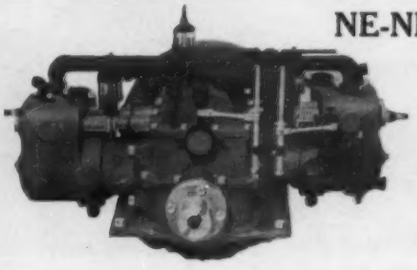
Always something new and up to date in Motor Boat Fittings.

Send 10 cents in stamps for catalog.

**C. D. DURKEE CO.**

2 SOUTH ST., NEW YORK CITY.

## NE-NE-MOOSHA



the name of our new demonstrating boat, in which we will be pleased at any time to **Demonstrate** to you in a **Practical** way the simplicity, reliability, ease of control, lack of vibration, and many other good points of the Leader Marine Engine. We sincerely believe five-minutes' practical demonstration in a boat to be more convincing and satisfying than five hours of hot air.

**THE SINTZ-WALLIN COMPANY**

CHAS. J. PUPKI, Eastern sales Mgr. 150 Nassau St., New York

## THE NEW LONDON MARINE IRON WORKS

NEW LONDON, CONN.

**A. Appleton Packard**, President & General Manager.

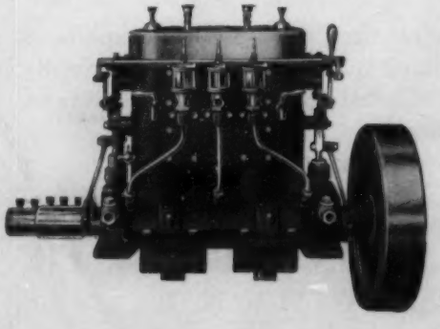
(Formerly superintendent **Herreshoff Mfg. Co.**, and late of Burgess & Packard.)

Engineers, builders and repairers of steel and wooden vessels, marine engines and boilers.

3 marine railways, 300-600 and 1500 tons.
Brass and Iron Foundry.

**YACHT WORK A SPECIALTY**

## STANLEY MOTORS



MAKE AND BREAK IGNITION

Direct from Factory to User at FACTORY PRICES

We also manufacture the well-known **TOQUET MOTORS** which can now be purchased direct from us.

HIGHEST CLASS OF WORKMANSHIP

Have stood the test of Long Service

Prompt Deliveries

WRITE FOR CATALOGUE WITH PRICE LIST. IT WILL INTEREST YOU.

**THE STANLEY CO., 79 Milk St., Boston, Mass.**

1908 **The Lackawanna** 1908

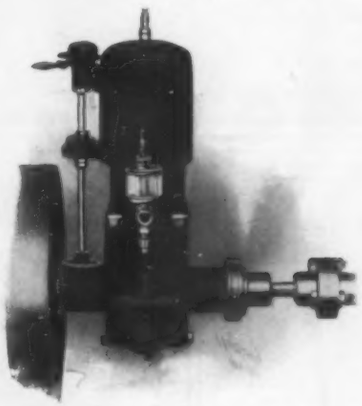
## HAS QUALITIES THAT COUNT

THE LATEST THE MOST RELIABLE THE BEST

**SIMPLICITY, EFFICIENCY**
**EXCELLENT CONSTRUCTION**
**RELIABILITY**
**These are Qualities that Count**

**AVOID COMPLICATION**

The **Engine** is what you are buying and **nothing whatever** is **gained by additional complicated attachments** where our later, **simpler** devices have **already proven perfect.**

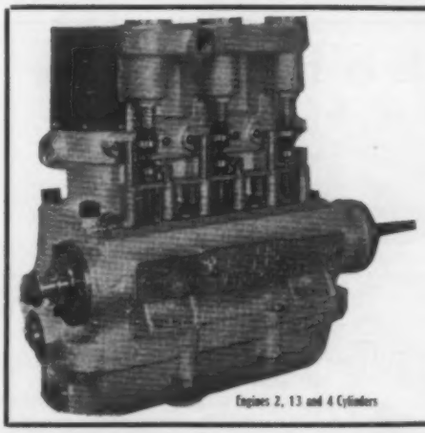


VALVELESS—Ten Sizes, 2½ to 45 H. P.

**Just Bear in Mind** that we have for **Ten Years** manufactured high grade Marine Engines which please our customers—that these engines are usefully efficient—with strength and material to last—**that we can supply you such an Engine**—and **get our latest 1908 Catalogue Free. Send to-day.**

**LACKAWANNA MFG. CO., - 3 to 21 Coldwell St., Newburgh-on-Hudson, N. Y.**

NEW YORK BRANCH: 126 Liberty St. N. E. AGTS., EAST BOSTON, MASS.: Lockwood Mfg. Co.



Engines 2, 13 and 4 Cylinders

## DIETER-OFELDT

### STEAM EQUIPMENT

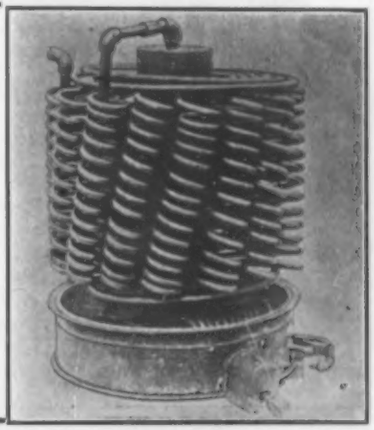
More reliable, Safe, Efficient and Flexible than Gasolene Engines. Boilers made to burn Kerosene, Wood or Coal, singly or combined.

**6, 8, 12, 15 and 20 H. P.**

Light Weights. Moderate Cost. Easy and inexpensive to operate. Write for full information to

THE DIETER STEAM ENGINE CO.
or AUGUST OFELDT & SONS
123 LIBERTY STREET, NEW YORK, U. S. A.

Boilers Round or Square



PRICE OF HOOD,
**60 Cents Each.**

When ordering these hoods send a short piece of the insulated secondary wire you are using so that the terminal with ferrule may be accurately fitted.

WITH **"RAJAH"** SPARK PLUGS AND HOOD

**IGNITION IS ABSOLUTELY SURE!**

**The fastest boats in these waters to-day are fitted with "RAJAH" Spark Plugs. Why? Because after thorough and exhaustive tests they have been proved to be the best.**

**They have stood the test for five consecutive years without any change in construction—none being found necessary—and no change will be made for the coming season. No other spark plug on the market can equal this Record.**

RAJAH AUTO SUPPLY COMPANY, 140 Washington Street, NEW YORK, U. S. A.

# Little Giant
GASOLINE MOTORS

**Reliable--Reversible--Two Cycle**

**3 Port, Eliminating the noisy and troublesome Check Valve of the 2 Port Type**

Light Simple and easy to operate. Only three moving parts. Main bearings Babbitted. Material and workmanship of the highest grade and guaranteed. JUMP SPARK IGNITION.

**POSITIVE FORCE FEED LUBRICATING SYSTEM**

**Water Sprayed Exhaust Silencer or Muffler.**

SEND TO-DAY FOR OUR FREE CATALOGUE A 12

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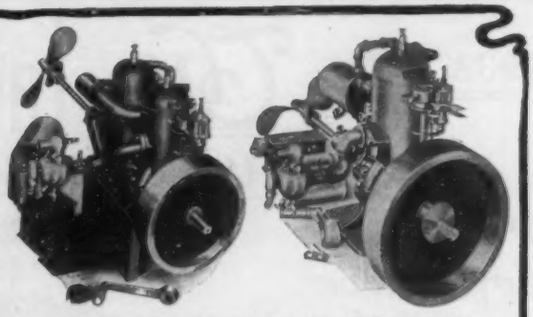

**Ten cents postage brings our Treatise on the Gasoline Motor.**

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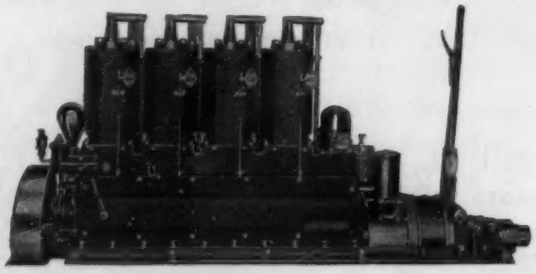
THE SILENT SIMPLIFIED ENGINE



Has less moving parts than any four-cycle engine with mechanically operated valves.

Has no oil-cups, oil pumps or sight feeds requiring attention.

Has no piping attached to the cylinders.

We guarantee a fuel consumption of not over one-tenth of a gallon per horsepower hour.

Does this interest you? Then let us tell you more.

We build Two-cycle Engines just as good as our Four-cycle.

**THE S. M. JONES COMPANY**

Successors to **The Rathbun-Lacy Company**

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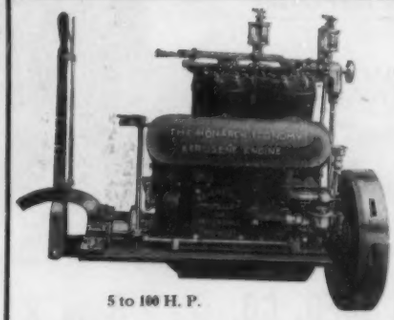

5 to 100 H. P.

**ECONOMY**
IN OPERATION
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ARE WHAT YOU PURCHASE WITH A

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**KEROSENE ENGINE**

OUR CATALOGUE TELLS WHY SEND FOR IT

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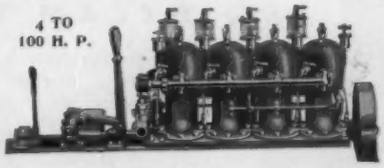
100 FRONT ST., GRAND RAPIDS, MICH.

# ROCHESTER MARINE ENGINE

4 TO 100 H. P.



Runs smoothly and satisfactorily the minute it is installed without a skip or a break—it is an engine of the highest efficiency; every one is built and delivered for a reputation. Constant and unfailing care in making has produced the greatest power by allowing the smallest waste—with resulting economy of fuel. Exhausts under water without back pressure or noise. Speed control is slow enough for fishing—fast enough for racing.

**SPEED BOATS** Guaranteed to make 18 miles an hour, 25 ft. long, 16 horsepower, 4 ft. 4 inches wide.

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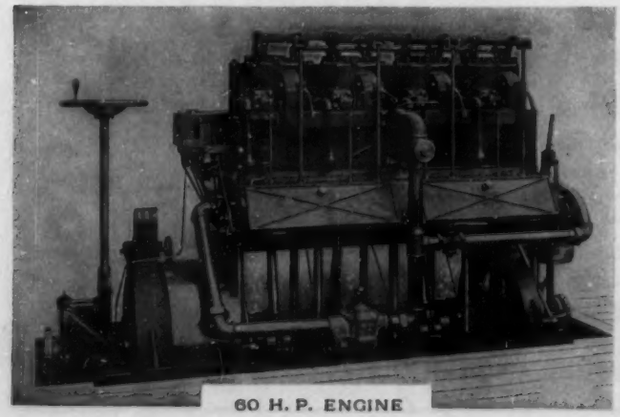

60 H. P. ENGINE

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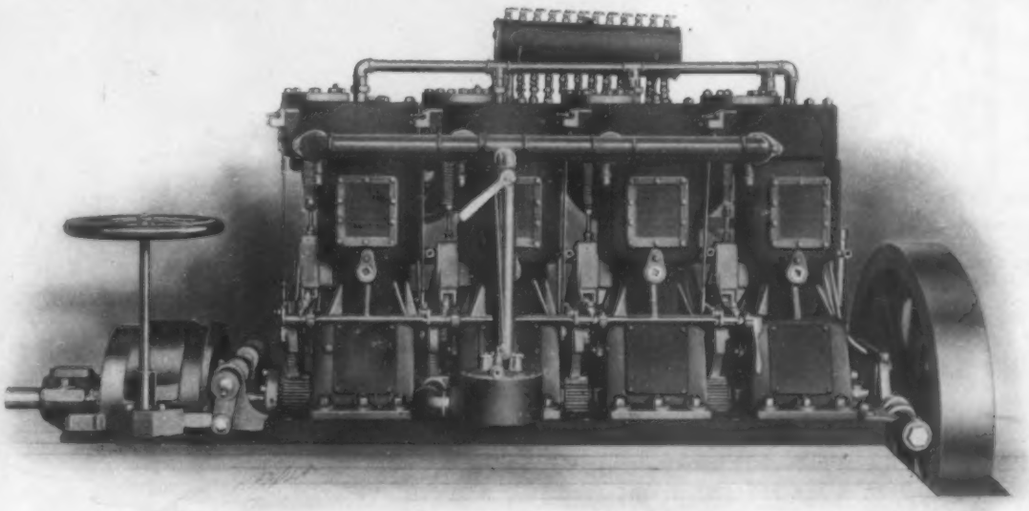

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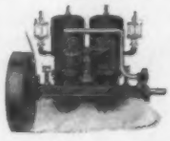

We will continue with our one aim to build the **BEST** small marine engine, not the cheapest

Those who want reliable power for their family or racing boat should write us.

CUSHMAN MOTOR COMPANY
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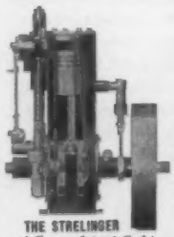

THE STRELINGER
(4 Cyc.—1 to 4 Cyl.)

## The STRELINGER

4-CYCLE GASOLENE ENGINE.

BEST MARINE ENGINE MADE.

Absolutely Safe and Sure.

EASY TO START AND CONTROL.

DURABLE, RELIABLE, ECONOMICAL AND POWERFUL.

Its unparalleled popularity is proof that it is the Ideal Engine for launches and boats. Write for our 1908 Catalogue and Price List.

We carry in stock 2 and 4-Cycle Marine and Stationary Engines, 1½ to 50 H.P., $25 to $2,500. Also a full line of boat accessories, and can furnish anything you want in the Gas Engine line.

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## Start Right This Year

IF a disappointed "*Old Hand*," because of previous unsatisfactory motor experience, learn the meaning of "Engine Satisfaction" by putting in a "**BUFFALO.**" If a "*New Beginner*," guard against trouble and ensure a pleasurable start and continuation in motor boating by following same plan.

**Engines for Any Size Boat, for Any Kind of Work, for Use Anywhere—the Dependable Kind which Have Created the "Buffalo Reputation."**

2 to 100 H.P., 2 to 6 Cylinder, in Regular Type; 6 to 54 H.P., 1 to 6 Cylinder, in Slow Speed Heavy Duty Type. All "BUFFALO QUALITY" throughout.

Our 48-page *Handsomely Illustrated* Catalogue sent free to interested parties on request.

BUFFALO GASOLENE MOTOR CO.
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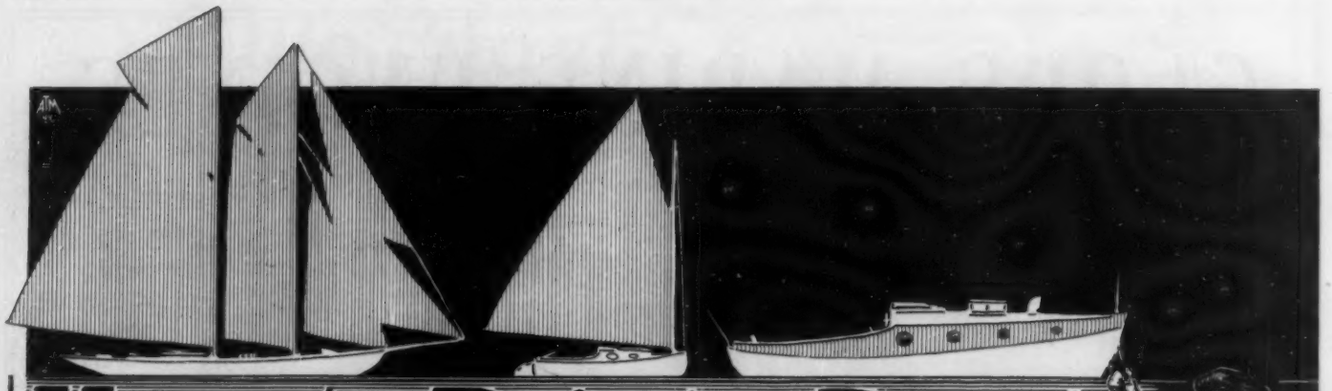
MAY 4 1908





# How to Paint a Boat

and how to make the paint wear and stay bright after it is applied are two very different problems.

There is considerable art, or at least "knack" in the proper wielding of the brush—and good paint can be made to go wrong by poor application—but no amount of skillful work will make good paint out of badly chosen material.

### PURITY OF MATERIALS OF PRIME IMPORTANCE

Purity of the White Lead used is the first thing of which the yachtsman or boat builder should assure himself. Do not believe that every keg or tin labeled "pure White Lead" contains the real corroded "carbonate" of metallic lead. The latter is the real paint material, but what is politely termed "trade custom" permits you to be deceived into accepting chalk, barytes, white clays and various worthless substances under the name of "White Lead" (often at approximately White Lead prices).

The only protection is a chemical test or the guaranty of a reliable manufacturer. The simplest test is that of the blow pipe described and illustrated on this page. Any one can make it. As for guaranty, one cannot go wrong if National Lead Company brand is used. We guarantee the purity of all White Lead bearing on the keg our Dutch Boy Painter trade-mark.

Having secured White Lead guaranteed by the Dutch Boy Painter, next see to the linseed oil. This necessary paint ingredient is largely adulterated, but good linseed oil can be secured if care is taken. Atlantic, Lewis and Armstrong & McKelvy are among the reliable brands.

### THE BLOW PIPE TEST

To test for adulterations in White Lead place a pea-sized bit of the material in a hollow scraped in a piece of charcoal, on a piece of wood. Direct upon it a flame by means of a blow-pipe. If the White Lead is pure it will reduce under the flame to globules of the metallic lead—from which it was originally made. If any residue remains unreduced, it shows the presence of adulterations. If *no* lead beads can be produced, it is certain that the supposed White Lead is wholly fraudulent.

A blow-pipe for making this test, will be sent free upon request, to any yachtsman or person interested in the painting of boats or buildings. Full directions for making the experiment together with other information about paint and painting will be mailed at the same time. Ask for Test Equipment X.

ADDRESS
NATIONAL LEAD COMPANY, NEW YORK
Or any of our Branch Offices named at the foot of the page

### MIXING THE PAINT

The proper mixing of the White Lead and linseed oil is important. Do this yourself at the time of painting, not only because the compositions of prepared paints are uncertain, but also because pigment and oil should not be allowed to stand long together before application. We recommend the following formula for average conditions:

**PRIMING COAT**
100 lbs. pure White Lead
6 to 7 gallons pure raw linseed oil
1 gallon pure turpentine
1 1-2 pints pure turpentine japan

**SECOND COAT**
100 lbs. White Lead
1 1-2 gallons raw linseed oil
1 1-2 gallons turpentine
1 1-2 pints japan drier

**THIRD COAT**
100 pounds White Lead
1-2 gallon raw linseed oil
2 gallons turpentine
1 1-2 pints japan drier

By painting extremely "flat" the film exposed to the water wears much better than a film rich in oil.

In mixing paint put in the drier and tinting colors while the paint is still in the form of thin paste, add the necessary oil next and finally the turpentine.

### HOW TO MAKE TINTS

Any desired tint can be obtained with White Lead except the very dark ones. A very little lamp black or drop black to the hundred pounds of White Lead makes the various grays. A little Prussian blue in White Lead makes the lighter blues; and so on for all the tints of the rainbow.

### PAINTING METAL PARTS

Iron and steel hulls, masts or other metallic parts of a vessel should be painted first with National Lead Company's Red Lead, mixed twenty-five to thirty-three pounds of Red Lead per gallon of pure linseed oil. The linseed oil should be one-third boiled oil and two-thirds raw oil. Varying quantities of Red Lead are given because conditions are not always the same. The more pigment to the gallon of oil, the better, up to thirty-three pounds.

After two coats of Red Lead, finish with White Lead tinted to suit, if on ornamental parts, or with anti-fouling paint below the water-line if desired.

We shall be glad to send to any address upon request, general painting literature or reply to any specific inquiry on painting which you may desire to ask.

ADDRESS MARINE PAINT DEPARTMENT

## NATIONAL LEAD COMPANY

New York Boston Buffalo Cleveland Cincinnati Chicago St. Louis Philadelphia (John T. Lewis & Bros. Co.) Pittsburgh (National Lead & Oil Co.)

# *I Want You to Try My Razor*

If you are still depending upon the barber or old-fashioned razor you are in the same category with the man who climbs ten flight of stairs when there is an elevator in the building.

You are not only like him—losing time—which is money—but you are also losing the benefits of a clean, comfortable home shave—which is not only a great convenience but also economical.

With the "Gillette" the most inexperienced man can remove, without cut or scratch, in three to five minutes, any beard that ever grew.

My razor is always ready, **No Stropping, No Honing.** No other razor so durable. The "Gillette" will last a lifetime. Blades so inexpensive, when dull you throw them away as you would an old pen.

I have spent years in perfecting this razor, which gives you the best possible shave at home or away—saving you time, money and endless inconvenience.

Over two million men know how well I have succeeded. I want *you* to enjoy the benefits of my razor. All Jewelry, Drug, Cutlery, Hardware and Sporting Goods dealers sell it. Get it to-day.

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**The Gillette Safety Razor Set consists of a triple silver-plated holder, 12 double-edged flexible blades—24 keen edges, packed in a velved lined leather case, and the price is $5.00.**

**Combination Sets from $6.50 to $50.00.**

Ask your dealer for the "Gillette" to-day. If substitutes are offered, refuse them, and write us at once for our booklet and free trial offer.

GILLETTE SALES COMPANY

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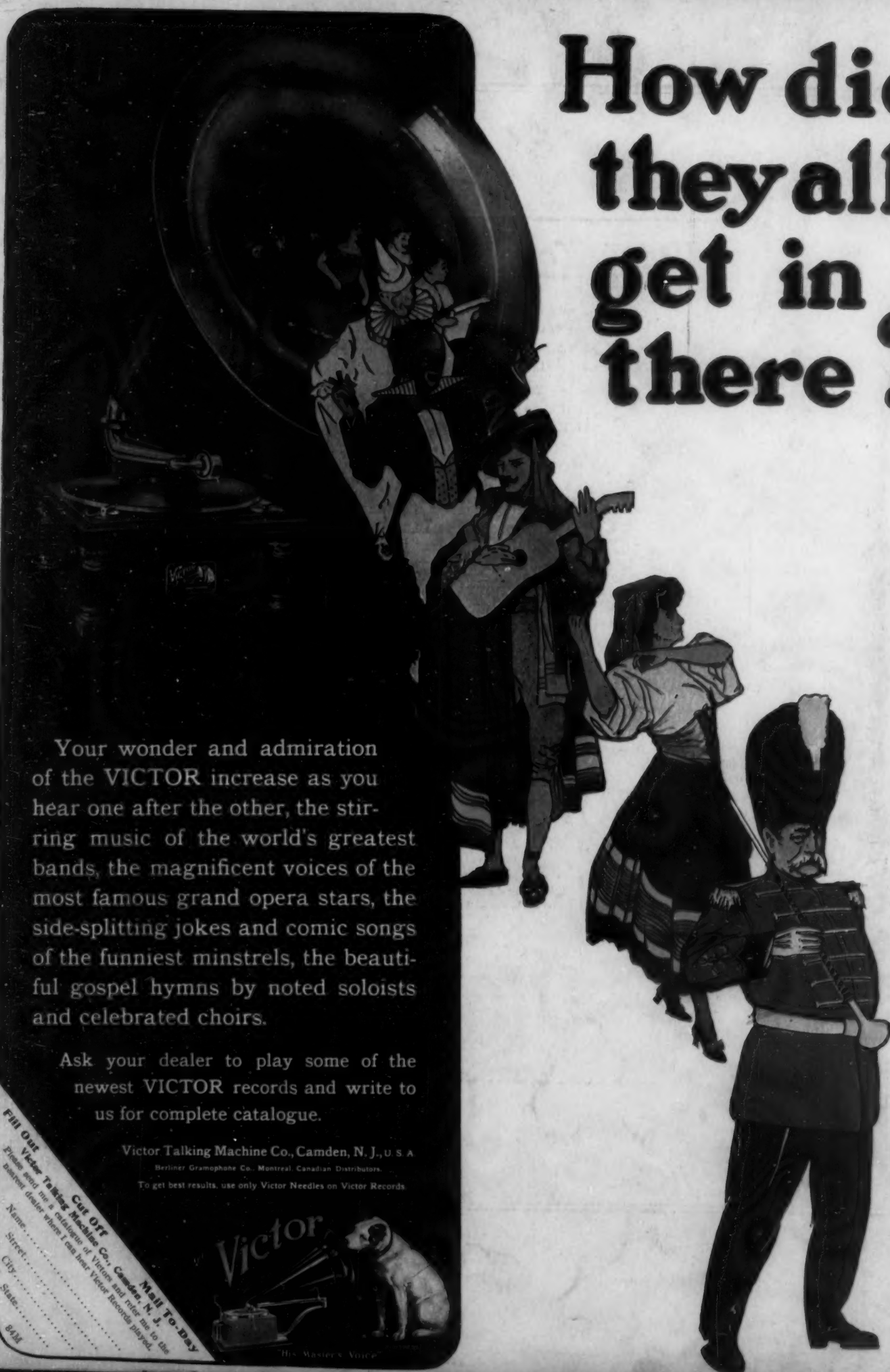
**Gillette Safety Razor**

NO STROPPING NO HONING

# How did they all get in there?



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